





OUR AMERICAN CIRCULATION.

WE have to announce that, in accordance with a practice which we have followed for several years, we shall issue a large number of specimen copies of our next number (May 15) to the American trade. We shall include in that circulation every member of the American Pharmaceutical Association and a great number of first-rate firms, wholesale and retail, not included in that list. By carrying out this system very thoroughly, and by the aid of excellent agents in New York, Philadelphia, Boston, Chicago, and San Francisco, we have succeeded in building-up a handsome constituency of subscribers all through the United States. We especially commend our next circulation to the notice of firms desirous of communicating with the American trade.

We may also here call attention to the fact that several of the best houses in America are inserting their announcements in our pages. In addition to those we have previously mentioned, we may refer to the card of Messrs. McKesson and Robbins, of New York, which appears for the first time in this number. This firm is a very important one in America, and is particularly eminent for the specially high quality of its goods. We have received their prices current, which is a handsomely got-up book, and contains, as a frontispiece, a steel engraving of the portraits of the four members of the firm.

THE UNIVERSAL DRUG SUPPLY COMPANY.

LAST month we drew attention to a new Limited Company just floated, which, under the title of the Universal Drug Supply Company, proposed "to deal in drugs and carry on the usual business of apothecaries, pharmacutists, chemists and druggists." The members of that company were a major-general, two captains, one honourable, two solicitors, and an M.D., not one of them being registered as a chemist and druggist. We said then, and we now repeat, that a limited liability company with such objects, unless composed exclusively of registered chemists and druggists, is an illegal combination; and we further intimated that these gentlemen had, by the registration of their association, already assumed the title of chemists, and were, therefore, already amenable to the penal clauses of the Pharmacy Act. They make no attempt to evade the Act, as do the co-operative companies; they united probably in ignorance of the law, but they maintain their combination in defiance of it. They have taken premises at 357, Oxford-street; they are having those premises elaborately fitted up as a chemist's shop, and as far as we know, no official interference has yet been deemed necessary. Possibly the Council is waiting till the gentlemen shall have finished their preparations, on the principle of supplying them with a sufficiency of rope. If that be so, we have nothing to complain about; but as we have obtained a Pharmacy Act with no little trouble, we see no reason why these gentlemen should be permitted to trample on it, even though they do number two solicitors among them.

THE PHARMACOPŒIA APPENDIX.

ON another page we print the discussion which took place in the General Medical Council, respecting the reprint of the Pharmacopœia. Of course the proposal was agreed to, but with a few words added by the President (Dr. Paget), which may cause considerable annoyance. He suggested that the Pharmacopœia Committee should be at liberty to publish a reprint "with such corrections as were necessary." He thought some small alterations might be desirable, and could be made without interfering with the character of the work. That is likely enough; but it will never do to commence these "small alterations" until a new Pharmacopœia is called for. Every member of the committee would certainly have some little crotchet or another, and the sum of the "small alterations" would simply be an alarming confusion. Some of the members of the Medical Council, unfortunately most of them, are tormented with the demon of "one observation to make" on every subject which comes before them. Sir Dominic Corrigan is sadly weak in this respect; but his intellect can hardly be so helpless as we understand him to claim by the assertion that he finds great difficulty in determining the meaning of such phrases as "sparingly soluble" and "very soluble." We may inform him that the difference is very much the same as exists between "sparingly voluble" and "very voluble."

THE IRISH DRUGGISTS.

WE laid before our readers last month the position of the Irish Druggists, and the monopoly of dispensing possessed by the Apothecaries' Company. We also detailed the steps which had been recently taken to remedy whatever grievance existed. We are glad to notice that the prospects of a satisfactory settlement are very promising, and we believe, indeed, the negotiators at this moment can take their choice between the Apothecaries' Company of Ireland, and the Pharmaceutical Society of Great Britain, as their sponsors. The feeling in Dublin, we are told, is strongly inclined towards the former body, and doubtless by accepting their aid, the absence of opposition would be ensured. There may be peculiar advantages, too, in connecting the pharmaceutical body with the Apothecaries' Company which do not occur to us. But looking at the matter disinterestedly, and from an outside point of view, we cannot avoid the conclusion that the ultimate consequence of such a union will be that the pharmacists will take a position as an inferior grade of the medical profession, and may be liable to some disagreeable interference in the future. There cannot be a question but that other things being equal, the perfect independence of both pharmacy and medicine, as it exists in this country, is the preferable condition. Besides which, it would be a strange thing if both Irish and British pharmacists were not benefited by a more intimate acquaintance. The bill, when agreed upon, will have to be carried through Parliament, and the climate of Westminster is exceedingly fatal to bills introduced after Easter, unless they are of great urgency, or should happen to be purely sentimental. But whether carried this session or next, we think the energy and promptitude of the Dublin druggists is worthy of recognition.

VETERINARY CLASSICS.

THE horse epidemic which lately passed through the cities of the United States with such violence gave the "vets" an opportunity of displaying their Greek, in which they seem to have been rather more proficient than in the equally valuable art of curing this particular disease. Among the names with which they dignified the influenza (for it was neither more nor less), we find Epihippic, Hippozymotic, Hippozootic, Hippo Grippe, Catarrhal fever, Typhoid Laryngitis, Lung fever, Hippo-malaria, Epyzooty, Equine influenza, Hippie distemper, and Equine catarrhal affection. One of the fraternity, however, ignored Greek, Latin, English, and every other recognised language, and started one on his own account, if we may credit the *Canadian Medical Journal*, the editor of which "has seen" the following bill, emanating from a St. Louis veterinarian:—

SANT LEWIS Ganewerry the 4d 1873

Mr. ——— to James HanKox

Vetturerinary physickian and Surgeant Dr.

Too medikle advice twict	\$ 3 00
Konsultation over a ded mare sed to hev hed the eppzout	75
Goin to see two sick hosses in the nite (very cold) ..	2 00
To treatment of a kream kolored hoss two days with medisuns	4 50
To making an obstetrikul examinashun of a hosses throat	1 50
To settin up all nite in a barn with a sick hoss ..	2 50
To writin a preeskripshun for botts, & also one for spaving	1 00
To holdin a postmortim examinashun on a hoss who afterwards recovered	1 50
To givin my opinyun one day on the street regardin the kause of the zoot	4 00
Totil	\$20 75

Our contemporary humorously adds that the gentleman who received the above will not contest the same on account of the charges, but will pay it cheerfully as soon as he receives a remittance from his parents.

THE JOHN CARGILL BROUGH FUND.

ADDITIONAL SUBSCRIPTION.—Watson, Cleave, and Co., Shanghai .. £5.

A MEETING of the General Committee, Mr. Daniel Hanbury, F.R.S., presiding, was held, by permission, at the London Institution on Tuesday, the 8th of April, when the Hon. Secretaries, Mr. Michael Carteighe, Mr. Alfred Marks, and Mr. W. Chandler Roberts, submitted their report and accounts, as also a scheme for administering the fund. In the Report, it was stated that an appeal on behalf of the children had been made to the proprietors of the London Institution, the fellows of the Royal and Chemical Societies, and the members of the Royal Institution, and to others. The subscriptions received, including a grant from the Royal Bounty Fund of £150, in reply to a memorial drawn up by Mr. Roberts, and submitted by the Deputy-Master of the Mint, amount to about £1,500. In addition, subscriptions amounting to £200 are promised by the Savage Club, of which Mr. Brough was a member, and the sum of about £400 will be contributed by the Committee of Chemists and Druggists. After deducting expenses the net aggregate amount will be nearly £2,000.

A deed of trust of the usual kind was approved by the Committee, and the first trustees were appointed—Mr. Daniel Hanbury, F.R.S., Mr. Thomas Hyde Hills, and Mr. Michael Carteighe.

The Report further stated that two presentations to Christ's Hospital had been placed at the disposal of the family—one by a friend, the other by Mr. Alderman McArthur, M.P., the case having been investigated and recommended to him by Mr. Deputy Webster.

The Secretaries expressed their full confidence in the ability and judgment of Miss Brough, the aunt of the children, who has undertaken their guardianship, finding in her devotion the best reason for regarding with hopefulness the children's future. After a warm acknowledgment of the valuable assistance rendered by the members of the various committees, and especially by Mr. Thomas Piper, the Hon. Secretary of the London Institution, the Report terminated as follows.—"The Honorary Secretaries feel that they would not be justified in concluding this Report without assuring the General Committee that the generous sympathy and aid extended to the children have deeply touched the family, who regard the list of the several committees, comprising as it does so many honoured and distinguished names, as affording enduring testimony to the respect and affection in which Mr. Brough's memory is held."

The resolutions required to carry out the scheme having been passed unanimously, votes of thanks were accorded to the Treasurer of the Fund, Sir John Lubbock, Bart., M.P., F.R.S., Mr. Alderman McArthur, M.P., Mr. Deputy Webster, and the Chairman of the meeting.

CO-OPERATION IN LANCASHIRE.

ACCORDING to the Government official returns, co-operation in Lancashire is decidedly declining. The number of members in that county was stated to have diminished by 17,865, only 16,167 having joined, while 34,032 retired. With regard to capital, again, the amount invested during the year was put down at only £531,000, as against £1,117,000 withdrawn. Mr. William Nuttall, secretary of the Central Co-operative Board in Manchester, writes to the *Manchester Guardian* to contest the accuracy of these figures. He asserts that the Government returns on this subject are habitually inaccurate, and that, after ten years' experience, co-operators have ceased to place any reliance on them. His return of the members withdrawn during the year is only 8,270; of those admitted, 15,583; thus claiming an increase of 7,313, instead of a decrease of 17,865. The sum withdrawn during the year he states to be £366,530; the sum invested, £533,450; which shows an increase of £166,926 in the capital account, instead of a decrease of £586,000.

THE PHARMACEUTICAL DINNER.

WE understand it has been decided to repeat the experiment of a pharmaceutical dinner at the Crystal Palace on the eve of the annual meeting. We can most heartily recommend this dinner to our readers. That held last year, at any rate, was undoubtedly one of the pleasantest gatherings we have attended. Everybody laid aside his war-paint, and, without making the affair by any means a mutual admiration club, it was a manifestation of good feeling between coadjutors and opponents, which it is most desirable to renew occasionally. We hope to see a large assembly of gentlemen interested in pharmacy. We are not aware whether any secretary has yet been appointed, but doubtless letters addressed to Mr. Bremridge, 17, Bloomsbury-square, will reach the proper quarter.

AT THE EXHIBITION.

(SPECIAL.)

YESTERDAY (Easter Monday), the third of the series of annual International Exhibitions at South Kensington was opened to the public. This year the Exhibition is devoted to the industries of silk, steel, carriages, food, the science of cookery, and scientific inventions generally, of which, through the courtesy of Major-General Scott, we have been favoured with a private view.

First, as regards articles of food. Her Majesty's Commissioners, with a praiseworthy intention to teach the elements of physiology and chemistry even to holiday folk, have classified the alimentary substances as follows:—

CLASS I.

GROUP I.—Mineral substances: as water, common salt, etc.

GROUP II.—Non-nitrogenous force-producing substances, incapable of forming flesh or muscle: as starch, fruit, fats, etc.

GROUP III.—Nitrogenous substances, capable of producing both flesh and force; as eggs, flesh, wheat, peas, etc.

CLASS II.

GROUP I.—Containing alcohol, as beer, wines, spirits.

GROUP II.—Containing volatile oils, as the spices and condiments.

GROUP III.—Containing acids, as ripe fruits and vinegar.

GROUP IV.—Containing alkaloids, as tea, coffee, tobacco, or opium.

If it is folly to be wise, ignorance being bliss, we question the desirability of presenting to the gaze of a general, and not very discriminating public, the long string of adulterations contained in the Food Gallery. What hypochondriacal old gentlemen and nervous old ladies will do when they have thus taken a peep into the secret chambers of their grocer, their wine-merchant, and their tea-dealer, we cannot conceive. Here, for instance, is a large case, containing a number of samples of tea—that is, tea *sui generis*—some, of course, is the veritable Assam, and some the “finest Souehong;” but arrayed side by side in one dismal row are bottles with such labels as “sloe leaves,” “exhausted tea leaves redried,” and the same “gummed and coloured;” here is a bottle of plumbago, and there one of “Prussian blue.” Will the Good Templars have the conscience to urge us still to imbibe the drink which only “cheers;” clearly, if it fails to inebriate, it may succeed in doing something far worse. But, as if to give a timely check to the exultations of some rollicking son of Bacchus, we find in the next stand samples of aged port, dry sherry, mellow “Irish,” and “Old Tom;” but here, also, there is a thorn to the rose, for on the next shelf we are greeted with the (to us) familiar faces of decoctions of catechu and cayenne, logwood and caramel, while the addition of a bottle of oil of vitriol, with some solutions of acetate of lead and acetate of copper, make us feel quite at home. A little further on we find all kinds of spices and condiments—genuine and the reverse; also a tempting assortment of jams and marmalade which, however, we are informed are “adulterated” with “glucose”—by the way, we wonder how much glucose is an adulteration, and how much a necessary constituent of such preserves? But here we are in the midst of the Roast Beef of Old England—for on the next stand (Messrs. Marshall and Co.'s) is a collection of all sorts of preserved meats, etc., amongst which the orthodox plum-pudding is not forgotten—so that, thanks to this practical application of science, the wanderer from home at Christmastide, may carry a genuine English dinner in his two pockets. We are somewhat at a loss to understand the motive which has impelled the Commissioners to grant so much space to Australian meat. A pile of tins of boiled mutton or corned beef may be seen in any grocer's window, and we do not see what purpose, economic or artistic, is to be served by thrusting them upon visitors to the Exhibition. One fact regarding it is, however, noteworthy that whereas in 1866 the total amount of preserved meat imported into this country was $4\frac{1}{2}$ tons, in 1872 that amount was increased to 17,600 tons.

Messrs. Weston and Westall's stand recalls us again to our more immediate sphere, for here we see some very varied and

beautiful crystals of chloride of sodium, obtained from divers sources. T. and H. Smith, of Edinburgh, exhibit a quantity of coffee and flavouring essences. Close by is an assortment of jujubes and bon-bons, and all kinds of candied fruits, such as will make many a little mouth water with anticipation; but grave paterfamilias will not fail to descry some suggestive looking bundles of thin glue or “size,” which appear to be in dangerous proximity to the jujubes. Messrs. Fry and Sons, and Dunn and Hewett, have two very beautiful stands of cocoa and chocolate products, elegantly arranged. Schweitzer's cocoatina is also represented.

We wonder whether her Majesty's Commissioners ever heard of the Anti-Tobacco Society. If they have not, it is not that society's fault, and if they have, they do not appear to have much taken to heart the anathemas which periodically emanate from its head-quarters. For here, in the next gallery, we have such an array of tobacco in every form and shape as would have rejoiced the heart of the venerable Mynheer van Klaes. Pipes too, of every description and material, from the oldest and most rude apparatus which ever received the fragrant leaf, down to the gorgeous inerschäum on which is sculptured with marvellous beauty a representation of the Princess Louise's wedding. From tobacco to drink there is only a step, and hence the same gallery contains barrels of ale from famed Edinburgh and other brewers, besides heavy consignments of Highland whisky and Dunville's celebrated “Old Irish.” For those who either prefer something milder, or need a little corrective, there is a stand of Schwebpe's waters, and a supply of Cooper's new effervescing lozenges.

But sterner objects meet our view as we enter the gallery devoted to steel and surgical instruments of all kinds, and we brace our nerves to face instruments of torture both for man and beast, of every conceivable design. We pass by two splendid cases of cutlery from Messrs. Mappin and Webb and Howell and Sons, and find one of more special interest to us in that of Salom and Co., Regent-street, containing auricles of every description, enemas, and syringes, and also some very beautifully made trusses from Salmon and Ody. Mr. Howse's cardboard inhalers will doubtless attract attention. They are composed of either cones or cylinders of cardboard, with moveable mouthpieces of the same material, a piece of sponge being suspended in the cone by transverse strings. They are obviously extremely simple in construction and possibly none the less effective from their simplicity. Farns and Story exhibit magneto-electric machines, and Ash and Sons have a formidable looking case of tooth instruments. Various walking machines, designed for persons who have lost partial or total power of movement in their lower limbs may also be inspected. J. Gillingham shows some interesting specimens of artificial legs and arms—made of leather—and if there is “nothing like leather” these may surpass Nature's own apparatus. Hard by we are treated to a view of some ophthalmic instruments from Bengal, and these must be seen to be appreciated. We may, however, just mention a couple of hooks, for holding back the eyelids, formed, we should say, on the model of a jack-hook, also an instrument for removing foreign bodies from the cornea, resembling nothing so much as a “tenpenny nail.” Messrs. Lynch and Co., of Aldersgate-street, exhibit a case of stethoscopes, bougies, and catheters. And here we must express our regret at the absence from the Exhibition of the name of Maw, Son and Thompson. Possibly the firm may have considered that their manufactures are so well known and well established as to make further advertisement superfluous; but amidst medical appliances and surgical instruments it seems strange to look in vain for a name so well known to pharmacists and surgeons. Ireland is represented by Messrs. McAdam and Corcoran, of Dublin, with artificial legs and supports. Evans and Wormell exhibit, amongst other things, some historic knives, used by such operators as Sir B. Brodie, Cooper, and Blizard. Mr. Chas. Hawkins, F.R.C.S., contributes lithotomy apparatus, and Mr. F. Wormald, F.R.C.S., a set of lithotomy instruments which belonged to John Abernethy. Messrs. Louis Blaise and Co.'s case of instruments will call for general admiration. And interesting as specimens of what surgical instruments were in the collection, date about 1600, lent by the Royal College of Physicians. The College of Surgeons also sends some ancient designs, including a very complicated circular amputation saw, and Sir Astley Cooper's lithotomy case. Messrs. Robinson and Co. exhibit samples of lint and bunion springs. Her Majesty's

Commissioners provide a case of ancient Roman surgical instruments, all rude and battered, and Sir Anthony de Rothschild and one or two other gentlemen exhibit knives used in the Jewish rite of circumcision. The Royal Medical and Chirurgical Society have a very interesting case, containing the obstetric instruments used by the celebrated Chamberlens, and discovered in a secret depository in Woodham-Mortimer Hall, Essex, where Dr. Peter Chamberlen once lived. Although they appear to modern eyes extremely rude and clumsy, they are the prototypes of the midwifery forceps which have been in use ever since, and which have probably saved more lives than any other medical appliance. The Odontological Society exhibit some antiquated tooth instruments, about the date 1600, some of the keys having handles as large as a small sledge-hammer. Professor T. Lazarevitch, of the University of Kharkoff, contributes a selection of midwifery and uterine instruments. These are the principal objects of interest which came under our notice at our first and necessarily somewhat cursory examination. At no distant date we hope to furnish our readers with more detailed information.

Provincial Reports.

IRELAND.

UNITED SOCIETY OF CHEMISTS AND DRUGGISTS OF IRELAND.

A MEETING of the above society was held on Monday evening, April 7th, at 12, Grafton-street, Mr. Wells in the chair. There was a very large attendance of members, more than thirty being present. The principal business was to receive the report of the deputation which waited on the Governor and Court of Apothecaries' Hall, in accordance with a resolution passed at the previous meeting. Mr. Hayes, honorary secretary, read the report, which stated that a deputation consisting of Messrs. Hodgson, president, Hayes, honorary secretary, Goodwin, treasurer, Boyd, Holmes, and Wells, waited, by appointment, on the Governor and Court of the Apothecaries' Hall, to consider a bill promoted by them for the purpose of establishing a Pharmaceutical Society in Ireland. The bill was submitted to the meeting, and, with a few amendments, was generally adopted. It will be laid before the Apothecaries' Hall in its amended form, and if approved by them, a bill will be brought before Parliament at the earliest opportunity. It is intended that there shall be two classes of chemists here—one, styled "Pharmaceutical Chemists," will be dispensers; another, "Chemists and Druggists," will not be allowed to dispense.

Examinations similar to those of the Pharmaceutical Society will be adopted.

LIVERPOOL.

LIVERPOOL CHEMISTS' ASSOCIATION.

The tenth General Meeting was held at the Royal Institution, March 13th, 1873; the President, Mr. E. Davies, F.C.S., in the chair. Mr. Edmund B. Ewart, B.A., was elected a member. Several donations to the library were announced. Mr. Mason exhibited a beautiful specimen of "guaranine," manufactured by Mr. John Williams, F.C.S., of London, by the "benzol process," and explained the method of producing it.

Mr. A. E. Tanner asked if guaranine was known to have any peculiar physiological effect, as he thought it unwise to introduce it to the medical profession, if it were only identical with theine or caffeine. A discussion followed in which the President, Messrs. Abraham, Mason, Shaw, and Tanner took part.

Mr. Samuel Shaw Brown read a paper on "The Manufacture and Relative Therapeutic Characteristics of the Lints of Commerce."

An interesting discussion followed, in which the President, Dr. Ayrton, Messrs. Abraham, T. F. Abraham, Halliwell, Mason, Shaw, and Tanner took part. Mr. Brown replied to the various questions raised, after which an

unanimous vote of thanks to the author of the paper concluded the meeting.

The eleventh General Meeting was held at the Royal Institution, March 27th, the President, Mr. E. Davies, F.C.S., in the chair.

Mr. Alfred H. Mason, F.C.S., read a paper "On the Manufacture of Glycerine; its properties; its various applications, and quality as it exists in commerce." [This paper is printed in another part of this issue.]

At the close of the lecture an interesting discussion followed, and a vote of thanks was accorded to Mr. Mason on the motion of Dr. Cook, supported by the President, Messrs. Armstrong, Tanner, and others.

MEDICAL ELECTRICITY.

By W. H. WALENN, F.C.S.

THE application of electricity to the cure or alleviation of disease has been the subject of investigation by medical men, from the time that electricity first had an existence separate from other known forces of nature. If history is to be trusted, even before it was a recognised "fluid," "influence," or "force," electricity was applied in the art of healing; for about A.D. 50, Scribonius Largus narrates that the shocks of the torpedo were employed to cure Anthero, a freedman of Tiberius, of the gout, these shocks being then known as a power of benumbing and binding the strongest muscles; Dioscorides advises the same remedy for inveterate pains in the head, and further observations respecting this application of animal electricity were made by Galen. From that time to the eighteenth century, no notices appear to mark any progress in electro-therapeutics, although about a century before that time, electricity had a definition and a name.

This paper conveys no medical knowledge; it relates mainly to electricity and to the apparatus for applying that force to the cure or alleviation of disease.

If theory be defined as the mode of making seen and known the dependence of truths upon one another, then the application of this descriptive method to the various effects unfolded by experimental or practical electricity is very important, and perhaps the most important part of the science, so far as its progress is concerned. The theories of electricity that have been put forward from time to time, and have found favour in their day and generation, are a true picture of the state of human intellect at each particular date. Gilbert's theory of electrical action supposed the emission of a substance or effluvium from the electrified mass; this effluvium was supposed to be of a sticky nature, and to have been inherent in the electrified body before friction was applied, the friction calling the effluvium into activity; this theory may be called the earthy or telluric theory. After having the assent of scientific men for more than a hundred years, this theory that involved the existence of small solid particles of matter, gave way to a theory that may be called the hydraulic theory; and a most extraordinary hydraulic theory it was, for it pre-supposed not only that electricity was itself a fluid, but that it was two fluids proceeding in opposite directions through the same means of conveyance at the same time. It is true that in Du Fay's double-fluid theory, as it was called, the two fluids were believed to be independent of one another; but in 1759, Mr. Robert Symmer made a communication to the Royal Society, in which he advocated the theory that there were two electric fluids, co-existent and simultaneously developed by electrical excitation. Rather before this time, Franklin propounded his single-fluid theory, and arguing upon the disturbance of this fluid by friction (just as jelly may be disturbed by shaking), instead of upon its emission or contrary motion, he explained somewhat satisfactorily the phenomena of the Leyden jar. Between these two theories, for they produced an immense commotion in their time, many who have occasion to use electricity, even at the present day, contrive to effect a compromise. For instance, Dionysius Lardner, in his book dated 1856, adopts the double-fluid theory, but uses the terms positive and negative electricity, instead of vitreous and resinous electricity.

It is remarkable how prone the human mind is to prefer dealing with effects as if they were produced by some material

substance in preference to looking upon motion as the criterion of effect. Dalton found it necessary to theorize upon "atoms;" Huyghens upon luminiferous ether; and lastly the votaries of electric science found repose for their unquiet minds in two contrary fluids. All these facts go to show that refinement of thought and delicacy of the imaginative faculty are not so rife amongst scientific men as we might very fairly suppose; rather they tend to show that many otherwise powerful minds have not got beyond the mental condition of a good honest hard-headed carpenter, who believes only that which he can see or feel, and that anything like the possibility of there being a motive power or force behind the effects which they see is entirely beyond their mental conception. The more recent electricians who have advanced the knowledge of the subject so as to evolve useful results, such as the electric telegraph, and electro-metallurgy, have found these cumbersome doctrines inadequate for their purposes. Seeing the great analogy between electricity, heat, and light, and being fully imbued with the truth of the convertibility of force, electricity being capable of change into motion and heat respectively, these philosophers now regard electricity as a force or power, as a mode of motion of particles of matter conferring definite qualities on the materials subject to the action of the force. The supposition that electricity is a force and that it has its statical and dynamical conditions, takes the subject into a higher plane than that allotted to it by the older philosophers; it at once brings it within comparable distance with nerve force. Looking upon electricity as a polar force, it is only necessary to find out the means of disturbing its equilibrium in order to evolve it, and thus obtain its effects, according to the manner in which it is disturbed.

Notwithstanding the great advances lately made by physicists in their methods of classifying the various effects that the material world furnishes, the struggles to eliminate the old atomic theory from the conceptions of chemical change, and the full recognition of vital force or nerve energy, there are many medical men who write upon the science of electricity and its applications to their purposes, as if it really were a fluid or a potion, which they administered to their patients. One writer goes so far as to say that electricity does not cure, it is the physician who uses it that restores the patient. This illogical assertion is something like saying that it is not the steam which makes the railway train progress, it is the engine driver; in reality, electricity is the force used to cure, or the means employed, the method is supplied by the physician. Garratt, Lawrance, and Althaus, all more or less ignore the existence of electricity as a force of nature, and define it as a fluid. To take, by way of illustration of this point, the work of Dr. Julius Althaus, remarkable for the painstaking care that has been spent upon the elucidation of the precise function of electricity as a therapeutic agent. The definition, given by Dr. Althaus, of electricity in the year 1870, is a repetition of that given by him in 1859, and of Symmer's definition given in 1759, and it is as follows:—"In the present state of physical science, it is generally admitted that all bodies contain a very subtle [subtile?] fluid called *natural electricity*, and composed of two contrary fluids, which are termed positive and negative electricity. We suppose these fluids to consist of an infinite number of smallest particles or molecules, each of which possesses attractive and repulsive powers, the molecules of one attracting those of the other, whilst the molecules of the same fluid repel each other." This way of regarding electricity as an entity, and the want of exactness resulting therefrom, has led Dr. Althaus into some singular quagmires, from which, however, he has disengaged himself to some extent in the second edition of his book. On pages twelve and thirteen in the first edition, the astonishing fact is announced, for the first time in any scientific work, "that the direction of the current is different in the ordinary Voltaic pile and in the constant batteries," and is followed out by an analysis which results in the remark, "if, however, the metals are plunged into separate vessels, as is the case in the constant batteries, the direction of the current becomes different." In the second edition, the whole of this paragraph is re-written, and the fact of the direction of the current in the instrument being the same in both cases, fully recognised, Dr. Althaus having evidently fallen into error in the first instance in consequence of the original "pile" of Volta, of the year 1800, commencing with double plates and finishing with double

plates; whereas a single copper plate, for a positive pole at one end of the series, and a single zinc plate for a negative pole at the other end of the series, is all that is required. Here it may be remarked that although, in any battery, the zinc plate is the positive plate, *qua* battery, it is the negative pole, *qua* the work to be done by the battery, and is connected with the negative electrode; this point is often not made quite so clear as it should be in treatises on electro-therapeutics. In the first edition, there is a reckless indifference to the proper use of the terms "pile" and "battery." Volta's pile, it is true, is never called a battery; but Smec's pile, and Daniell's pile, are freely spoken of. In the second edition, a more rigid recognition of the difference between constant and inconstant batteries is evidenced; but still the carbon-zinc, bichromate of potash battery is entitled a constant battery; this battery, however, only owes its apparent constancy to the fact of the plates being raised out of the solution during inaction, in all the usual constructions of this instrument.

The only further difficulties of importance that Dr. Althaus appears to have fallen into are, that he makes out the quantity of electric force produced in a galvanic circuit to be distinct and different from the amount which may be travelling in the circuit, and that his description of the electro-chemical bath is put forth in a way which, if correct, would entirely puzzle an electro-plater. The electro-chemical bath is an arrangement in which the patient is placed in a metallic tub, vessel, or bath containing water, to which, in general, some acid or chemical substance is added. The patient is not in electrical contact with the sides of the vessel, but he grasps the positive electrode of a galvanic battery, the negative electrode being connected to the metallic vessel. This is exactly what would be done by an electro-plater if he wished to plate the inside of the vessel, and if the patient were the dissolving or supply plate of silver; yet, amongst his reasons for doubting the efficacy of this method of applying electric force to the human body, Dr. Althaus states:—"In the first place, it is impossible to understand how the galvanic current can convey into the liquid of the bath, and diffuse on the whole surface of the sides of tub, metallic atoms, which, according to the established laws of electro-chemistry, ought to be deposited only upon the surface of the electrodes." The present paper does not deal with the purely medical science in Dr. Althaus' works.

Much of the want of appreciation by medical men of the dynamical view of electricity now entertained by physicists is due to the fact that the genius of the medical faculty is incongruous to that of the faculty of the experimental philosopher or of the mathematical analyst. Many medical men have private proclivities to poetry, painting, and even music; but very few understand and realize a mathematical investigation or a mechanical arrangement. Any mathematician or engineer who has tried to explain an algebraical theorem or a new steam-engine to a doctor of medicine will realize this assertion to his misfortune. The typical doctor of medicine is not a man of exact science; his genius is rather that of a woman than a man, for he is instinctive in his perceptions, and his judgment is his great excellence. If the addition to his knowledge of more logical exactitude, and to his habits of more mathematical precision, than he has now, would impair, to any degree, his high sense of honour and integrity and his noble and sympathizing self-devotion to the cause of suffering humanity, it would be better to leave the doctor in his present lofty position without troubling him with more details of work (and they are many) than he has at present to master; but when it appears that a whole science suffers from the partial education which a medical man now receives, it behoves his brethren in other departments of science to see that he has some pabulum provided that will enable him to do himself justice, and to bring the latest discoveries in physical science to bear upon the requirements that occur at the precise point of applied science which he makes his centre of action. Such a proviso would tend to exalt the character and promote the usefulness of the medical man, and not to encumber him.

Like all bodies of men having a history and an ancestry, medical men have always been noted for their strong adherence to time-worn institutions in that precise manner which results in conservatism. No doubt electricity was a troublesome person when he knocked at the door of orthodox therapeutics and expected immediate employment in the capacity of a trustworthy remedy. His chance of success

was not improved by the rabble host of quacks and empirics that, in early life, he brought in his train. Seeing his energetic character, however, in the year 1836, some enterprising men, such as Dr. Golding Bird, who were already acquainted with some of his antics in other departments, employed him as a rouser to the lethargic organs of some of their patients. This is well put forward in a late lecture by Dr. Wilks. He says, speaking of the discharge of the Leyden jar:—"As regards its use in aphonia, it no doubt cured many cases of the hysterical form of the complaint, for I have seen it applied on more than one occasion, and the patient has immediately screamed out. I do not for a moment, however, attribute the result to any special attribute of electricity, believing that a good slap in the face would have been equally beneficial. I do not recommend this treatment, as it might be considered barbarous, and rouse the anger of newspaper editors, whereas the treatment by a machine and bottle would be *secundum artem*." The career of electric force as a curative agent was, however, only in its early youth, for in 1855 Dr. Duchenne, of Boulogne, introduced the use of the induced current into electro-therapeutics, and called it "Faradization." By means of this modification of electric power, he excited contraction of each particular muscle so as to display its physiological use, thus adding a specific action on the muscles to the rousing faculty above mentioned. In the meantime, Du Bois Reymond published his researches upon the condition of the nerves during the passage of a *continuous* current along them, and established the existence of a specific state in these nerves which he called the electro-tonic state. Lastly, in 1858, Dr. Remak, of Berlin, demonstrated the great benefit to be derived from the use of the simple continuous battery current. This was at first disbelieved by medical men, but recent experience has shown its value. In this case the circuit is continually made and broken, but not with any great speed, and one electrode may be stroked in the direction desired. Muscular contractions are produced by the latter method of employing electric force upon a paralyzed limb when Faradization fails. The shock or blow from the Leyden jar, the to-and-fro current from "Faradization," and the continuous current from the galvanic battery, are thus each made to do the work of medical electricity.

Among frictional machines or apparatus for supplying Franklinic electricity that are useful to the electro-therapeutist, Holtz's machine, brought forward in 1865, is perhaps the most practical. In its original form, a fixed glass disc carries an even number of tinfoil sectors, which receive from a small electrical machine alternately positive and negative electricity. This machine, which acts by induction, and may be called the electrophorous machine, was further improved by M. Holtz towards the end of the same year. In the improved apparatus there is a rotating disc and a fixed disc, the latter of which is charged by an excited plate of vulcanite. The fixed disc is opposed to the rotating disc, and has two deep notches of a peculiar shape; it is coated in two places with paper or card. The slight temporary electrization of the card converts into a continuous flood of intense electricity the force supplied by the arm of the operator. In Franklinic machines used for medical purposes, means should be provided for utilizing negative electricity as well as the positive shock. For this purpose the rubber should be mounted so that suitable dischargers may be connected therewith, and this peculiarity should not be confined to the prime conductor, as in ordinary machines. A portable self-charging Leyden phial, invented by Varley, recommends itself for use in similar cases to the aphonia case of Dr. Wilks already alluded to.

In Faradaic machines, Duchenne's still holds its ground with many. The electro-magnetic apparatus should be furnished with a dial for including various lengths of wire, either in the primary or secondary circuit, and means added to obtain breakages of the circuit at a definite speed adjustable as to amount and regularity or non-regularity. The regulation of the quality of the electricity transmitted through the patient, by means of the length of wire, is preferable to the water regulator formerly employed. The number of cells in the battery should be able to be easily altered according to circumstances. Magneto-electric machines are going out of fashion, but there is one machine that demands trial in electro-therapeutics, simply because it is the only machine that is known which produces anything like a continuous current. This machine

was invented and brought out by Messrs. Gramme and D'Ivernois, of Paris, in 1870. The keeper to the horse-shoe magnet of this machine is annular, and the magnetic polarity induced upon it simply continually advances along the periphery of the coiled ring as it revolves; there is no demagnetization nor interruption, and the electric current evolved is found to be continuous in one direction.

Now that galvanization is coming into use in preference to other forms of electric force, the chain batteries of M. Pulvermacher claim especial attention. These portable, highly practical, and easily adjustable arrangements are flexible, and can either be used as separate instruments to transmit the electric current in a definite direction by means of suitable conductors, or they may be arranged on the body to be worn constantly. Each link of this arrangement is a separate galvanic cell, and some of the forms are made so that the zinc elements can be replaced when worn out. A gutta-percha case or covering may be used in connection with the chain to prevent the evaporation of the vinegar or other liquid used to excite the battery. This instrument is not to be classified with those belts, whose only title to the name electric is that of a trade distinction. For those who have occasion for a fixed battery for galvanization, either the Leclanché battery, De la Rue's form of the chloride of silver battery, or Smee's battery, will be serviceable. The chief points of manipulation to be observed in these batteries are, the cleanliness of the metallic contacts in the conductors, the size of the conductors and electrodes, and the systematic use of a galvanometer in the circuit to ascertain the direction of the current, and the amount of electricity passing through the patient. A current proceeding from the head to the feet is called a "direct" or downward current, and is sedative in its action; a current proceeding from the feet upwards is called an "inverse" current, and is tonic in its effect.

The present definition of electricity is as follows:—Electricity is a force or mode of motion which may be communicated to particles of matter capable of receiving such motion. Its waves are of such a nature that—when interrupted by a medium which opposes their progress, but which would be able to transmit the undulations entirely if it were large enough—they are converted into heat waves, accompanied by luminous vibrations. If the motion be interrupted by a decomposable fluid, the chemical affinity of the component parts of the fluid is destroyed, and they are conveyed in opposite directions. At right angles to the direction of motion of the electric force the magnetic force always exists, and its amount and quality (boreal or austral) has direct relation respectively to the amount of the electric force, and to the direction in which it is travelling. Polarization, or that property by which there appears to be opposite qualities in different parts of the same body or in distant bodies—such as the opposite charges of a Leyden jar, or the opposite electrical condition of the metallic plates respectively at the opposite extremities of a galvanic battery—is the consequence of the electrical waves occurring in definite planes. Further, it appears that electrical wave motion confined to a given space, as in an insulated but charged conductor, for instance, tends to excite the same kind of wave motion in the opposite direction in a neighbouring conductor, and thus to produce the phenomena of electrical induction. In other words, one kind of electric polarity cannot be produced without the production also of the other kind, either in another part of the same body, or in distant bodies.

Not only is electric force, under specific conditions in each case, convertible into heat, chemical force, or mechanical motion; but, also under specific conditions in each case, these forces are respectively convertible into electric force. If the undulatory character of any one of these forces therefore be conceded, it follows that electricity is a wave-propagated force, since the method of conversion of one force into another is by changing the character of the wave-motion by which it is propagated.

Medical men will find this, the dynamical theory of electricity, much enlarged upon by the most able thinkers and workers among the physicists of the present day, such as Faraday, J. Clerk Maxwell, Sir W. Thomson, Sir B. C. Brodie, Charles Brooke, Dr. E. J. Mills, and a host of others. Such a grand theory, connecting up as it does the correlation of forces and the continuity theory of Grove with the vibratory theories of light and heat so ably put forward by Tyndall, must surely have interest for medical men, especially

for those who do violence to the conservatism of their race by calmly endeavouring to bring out the curative powers of the electric force. The range of thought, and therefore ultimately of action, that they would thereby make their own, might even help them to unravel some of the more recondite of the other therapeutical and physiological questions that are rife at the present day, and by this means take the medical sciences more out of the fog of ages than they are now. These remarks are called forth by the fact that is acknowledged by many medical men, that while all other sciences have been progressing with great speed, the healing art has lagged behind, and at least has not progressed so fast as they have. When electricity is better known as a force, its exact influence in each disease will be better appreciated, and the precise sphere of its utility will be more exactly defined.

A notable fact in the history of electro-therapeutics is that, as far as the instruments used are concerned, medical men now prefer to employ the same kind of electricity that Scribonius Largus wrote about, eighteen hundred years ago; but that instead of being obliged to keep a tank-full of live torpedos to cure the headache of any suffering patient who applies, they have managed (with the assistance of the physicians, and after trying many fallacious plans) to copy the electrical apparatus of the fish, and, by means of a box containing a few bits of metal and some mineral juices, to cure or alleviate certain maladies of the nerves and muscles.

LINT.

By SAMUEL SHAW BROWN.

IT will be well remembered by the trade that only a short time ago, even the looming in the future of a declaration of war produced a sort of panic amongst consumers of lint. Manufacturers and wholesale dealers nearly doubled their prices for it. Patients in our hospitals were stinted, thousands on the battle-field suffered, perhaps died for want of it, and nations were appealed to by their leading newspapers to supplement the lint supply by the most absurd and useless substitutes; recent mechanical improvements, however, it will be seen, have entirely removed the possibility of a future famine of lint, however quickly may arise any large increase of demand. At the outset I purpose to lay before you a brief outline of the history of the manufacture of lint during the last sixty years, afterwards to ask attention to the more important question "The Curative Characteristics of the various Lints of Commerce."

"The first ingenious and kindly hand which sought to relieve human suffering by scraping a soft, fleecy surface upon a piece of old rag, omitted to write its name on the records of history. It is improbable that science guided it during its primitive efforts to make lint; it is certain that affection did; it is doubtful whether it was then understood by the operator that such a process increased the capillary attraction and absorption of a textile fabric. It is probable the primary intention was, simply, to remove its hardness and harshness when in contact with a wound or sore. The number of patents for the making of lint, or its substitutes, since 1813, are only ten. The first machine employed to supersede the kitchen knife for lint-making appears to have been a rude, simple instrument, before which a girl sat, with her feet on a trundle, which pulled a knife down upon a soft cushion; the rag or cloth to be linted was wrapped round a wooden roller; the cloth was then placed between the knife and the cushion; the feet held down the knife while the hands pulled the cloth, and by alternate up-and-down motions of the knife, and to-and-fro motions of the rag or cloth, a soft pile was scraped on the fabric. This machine was, for many years, the only mechanical appliance for making lint. The first patent on record was granted to William Bundy, Camden Town, Middlesex, in the year 1813, and declared to be for improvements in linting machinery. The drawings of the machine then patented conclusively establish the fact that, in 1813, the kitchen knife and the old rag were as much national institutions for supplying the wounded with lint as the flint and steel were our common resources for lighting our candles and kindling our fires. That machine, though styled a "Lint Machine," was really only mechanism to make an article known on the Continent as "charpie," not a textile fabric, such as the present lint, but a mass of linen or

cotton threads, on which a fleecy substance was produced by combs. The second patent for lint came from Westmoreland, and was at first entitled "Improvements in Lint and Linting Machines," by Mr. W. G. Taylor, and was sealed May 24th, 1850. Mr. Taylor, however, felt it desirable to enter a disclaimer as to any improvement in lint, and satisfied himself and the patent authorities by simply claiming improvements in the machinery for making lint. This machine, although propelled by steam power, was only practicable at comparatively slow speed; therefore, while disclaiming any improvement in the quality of the lint, it was not surprising that hand-made lint lost no power of competition during the existence of this patent, until other lint-makers by power drove it from the market. The next two patents honoured the county of York, and were granted to R. W. Waithman; the first on the 14th September, 1855; the second on the 5th October, 1855. The drawings filed with these patents display considerable ingenuity, and prove that rapid production, combined with quality, was held to be of first importance. The drawings and specifications of all the patents mentioned, I have much pleasure in laying before you. The next patent was granted to Samuel Shaw Brown in July 1865, a second and more important patent was granted to him, dated September 22nd, 1870. By this process, five out of the six processes previously required for making lint are not required, and one girl may now be seen weaving, cutting, scraping, and completing lint measuring eighteen inches in width, and nearly three-quarters of a mile in length, in one week. Like most other mechanical improvements, quality is an accompaniment held to be essential, and in the produce of that machine it is found to an unusual extent. It may be incidentally mentioned there is increased softness and absorbing power, greater length and width for weight, and an increase of every property desirable for pharmaceutical or medical purposes. It will astonish those unaccustomed to mechanical power when it is stated that each loom or machine is so actuated that the linting knife cuts the fabric 300 times per minute, or 18,000 per hour; in one legal day, 180,000, or more than one million times the knife cuts and scrapes the fabric in the course of one week. To this patent has been added one other, dated February 24th, 1872. Granted to Francis Ayrton, Esq., M.D., and Samuel Shaw Brown; the last two are the only patents now having legal existence, and are the property of a Liverpool firm.

Through every department of the International Exhibition of 1862, I sought earnestly for specimens of lint exhibited, I found but one in the surgical department of all nations, that came from our neighbouring town Runcorn; it certainly had beauty in its favour, yet it lacked many of the essential characteristics of a good lint. It has often appeared to me remarkable that so much thought and discussion should have been devoted to some of the minute trifles of surgical science, while so little has been given to an important article scarcely an hour a day out of the well-employed surgeon's hand. To at least 75 per cent. of those who either retail or supply lint—lint is lint; those three words are to them its history, its qualifications and its importance. I think, however, before this paper concludes, some will think otherwise. Only a few years ago, many of the leading hospitals gave preference to lint made from old rags, this was indeed the chief obstacle which prevented mechanical science (so far as the lint is concerned) becoming the handmaid of the art of healing; why such preference should have been given cannot be explained philosophically, for economy was against its use, and superiority was decidedly on the side of the new. It can only be accounted for by the dread of innovation—shall I say the prejudice of the surgeons of that day? We now arrive at the second branch of the inquiry.

THE RELATIVE THERAPEUTIC CHARACTERISTICS OF THE VARIOUS LINTS OF COMMERCE.

During the investigation you gentlemen will, while remembering that I have had three patents granted me for lint-making purposes, at once understand the propriety (although not a manufacturer of lint) of my abstaining from giving the makers' names with the samples of lint I shall lay before you. The lints I shall show you are made by the three principal manufacturers, and are selected as the most suitable to sustain the arguments I may advance; nor must it be forgotten that lint-makers alone are not wholly responsible

for much of the inferior lint sold: they are but ordinary mortals, and so make those kinds they can sell the best and make most money by. It will be well at first to define what are the functions in the art of healing. Lint is expected to exercise, it is easy to answer why, to dress a sore or to staunch a wound; but the true question is what ought to be its action upon the sore, and what are its correct operations on the wound. These being determined, our way is clear for the inquiry which kind of lint will best perform those duties. With regard to the ordinary ulcerated sore, I assume that lint is mainly employed as a soft delicate vehicle for carrying and gradually distributing the ointment over the parts affected, it is not employed as the active curative, but as the agent of the healing drug it carries; it must be remembered, however, that as the ointment becomes gradually absorbed, the lint becomes closer, and at last in close contact with the ulcerated part, it therefore follows that lint so applied should have first of all, sufficient absorbent power to retain the heated and somewhat ointment until its absorption is effected; secondly such softness and evenness and elasticity as to adjust itself to the altered circumstances after the absorption, next that it shall have a pile or flue free from irritating particles and sufficiently firm to the fabric, that when removed from the afflicted part, no portion shall be left to induce irritation by a second removal. When lint is used to bind a wound or cover a lacerated limb, its office is in some respects different. When laid across a cut, its duties are not merely to bind together the separate parts, but also that its minutely fine and delicate fibres, shall to some extent act as plugs to the exceedingly small blood vessels which have been severed, and also by its powers of absorption to receive and retain a sufficient quantity of blood to coagulate and so coat the injured member as to become a sort of flood-gate to prevent any further egress of the stream of life. Lint is also used largely for hydropathic purposes. It is also frequently applied to absorb and keep in contact with the flesh or the skin medicated solutions; it is not unfrequently employed in a dry state to absorb those discharges which would extend the disease, if such excretions were not seized upon by an absorbent, and their spreading restrained.

These are some of the most important duties of lint; surely, then, it is highly important to ascertain the kind of lint most suitable to each and all such cases. So far as I have been able to ascertain there has never yet been a satisfactory and generally acknowledged solution of about the only problem advanced in relation to lint, namely—Is a lint made from cotton or flax the best for either general or even special surgical purposes? I will now tender you the results of nearly twenty-six years' experience as a manufacturer of lint; first, I will give you the theories which have been advanced in favour of each. The pet argument of the admirer of flax lint is, that it is a better conductor of heat than cotton, and so cooler; and as inflammatory action is the usual accompaniment of sores or wounds, flax lint is therefore the better dressing. The favourite argument of those who prefer cotton lint, is, that it is a better absorbent, has a less number of irritating particles, and that there is not so great a difference in its relative capacity for giving off heat as to be any detriment whatever; while it is also much less costly, and can therefore be more liberally used. When inquiring into the relative merits of the two vegetable fibres, it must always be borne in mind that flax is the most dense and heavy of the two. I have here a one pound parcel of cotton lint, measuring 15½ inches wide and 9 yards in length; I have also by the side of it a one pound parcel of flax lint, measuring 17½ inches wide, and 6 yards 12 inches in length. In the flax lint you will find 15,960 inches, in the cotton 20,088 inches, or number of inches in favour of cotton, 4,128; and it will always be found that cotton lint has a much greater surface for weight than flax when both are of equal thickness. The advocate for flax lint has not been content without calling the microscope to his aid. I am certain however he has gained nothing thereby; all he has proved is that the fibre of flax is round, while the fibre of cotton is flat. Erasmus Wilson in his treatise on the skin, affirms that cotton fibres have sharp edges, while flax fibres are perfectly round and smooth. I and others of far greater authority have carefully sought for that peculiarity so far as the sharp edges are concerned, but failed to find it. In a given weight or bulk, cotton for bulk is the better absorbent. There is also another important fact to consider; the fibres of

both cotton and flax have been spun into yarn, and woven into cloth before lint can be made from them, and it is well known to spinners and weavers that cotton yarns and cloth can be manufactured smoother, more even, and with less number of burrs or irritating protuberances than flax, except that class used to make linen cloth far too costly to be within the reach of the lint maker. Nor must it be forgotten in relation to this fact, that when the cloth is scraped, the rough particles are brought to the surface of the lint. The only remaining question then is, does the relative difference between cotton and flax as conductors of heat outweigh other considerations? As lint is seldom used without other appliances to retain it in position, I much question whether the thickness or thinness of the outer covering may not be so regulated as to compensate for the difference, if any, in the heat-conducting properties of flax and cotton lints. I will not go so far as to say there are not special cases where great absorbent power is not essential, and when coolness and fineness are. In such cases, a fine flax lint, such as sample No 3, may be desirable; but in all ordinary cases in which lint is required, my experience, and I believe the true teachings of science, are favourable to cotton lint.

Hospitals and dispensaries almost exclusively use cotton lint. If flax lint was the most speedy restorative it would be the soundest economy to use it, and the sooner relieve such institutions of the expense of maintaining and physicing the patient. This affords another reason for the settlement of this so long disputed question.

Some of those who have sought eagerly to sustain their prejudice against cotton lint have advanced some peculiar theories: one is that cotton lint, after being saturated with solutions while drying on the wound, will contract and shrivel up to a greater extent than flax lint. Of this they have offered no proof. I have tested this assumption by the two samples before you, one cotton, the other flax. Each were cut exactly twelve inches square while dry, then each were laid open and flat on a square board and equally saturated with water at about 80° temperature. Each measured while wet exactly the same as before sprinkling. They were afterwards dried in about 90° of heat. Each, when perfectly dry, were about 3-16ths of an inch less than twelve inches square, so each had shrunk about the same, proving the contractile force of cotton and flax to be exactly the same in such condition, we may expect, after lint has become dry upon a wound.

To decide the relative absorbent powers of flax and cotton, I took a pound roll of flax lint precisely the same as the one on the table, also a pound of cotton lint like the one before you—the relative measures I have before given you. I placed them on the surface of a large tub of water: the cotton lint so quickly absorbed the water that it sank to the bottom of the tub in one minute and three seconds. The flax lint remained on the surface thirty-three minutes before it absorbed sufficient water to cause it to sink. I then allowed each pound of lint to remain in the water one hour, and afterwards suspending each to drain thirty minutes, the weight of the roll of flax was 5 lbs. ¾ ozs.; the roll of cotton weighed 5 lbs. 5½ ozs. I then again suspended them in a temperature of 70° during fourteen hours; the flax then weighed 4 lbs. 7 ozs., the cotton 4 lbs. 9 ozs. These experiments, I think, furnish proof that cotton lint is not only much the quickest, but also the most powerful absorbent.

Although I assert my belief that cotton lint is preferable to flax for general therapeutical purposes, it is but right you should know that lint makers, if they were influenced by commercial reasons only, would most decidedly advocate the use of flax lint, because they make much larger profits by making and selling flax lint than by cotton lint. I am now about to combat another prejudice of the lint buyer and user, which has done much to keep out of the market the kind of lint most useful. Many chemists and surgeons have been captivated by the term superfine, and the only reason they can give is because superfine is more costly than fine, and fine more costly than common, and therefore should be better. The therapeutic properties of the lint have had but a secondary consideration to its external appearance. Now a fine lint is necessarily a close lint, harder [at the back, less elastic and less absorbent than a loose open and, therefore, better ventilating and absorbent fabric. Lint cloth, as a rule, is woven too closely. I have here before you several samples of lint to illustrate my meaning. One I have had

woven and linted in Liverpool especially, to prove how open yet how even, soft, and powerfully absorbent lint can and ought to be made. Now I hold it to be the duty of chemists to thoroughly understand the nature and practical utility of the lint they sell. The surgeon and physician have delegated that duty to them—he sends them his prescriptions, and expects them to supply the best quality of the medicines he orders. He also leaves them to judge and supply accordingly the kind of lint most suitable to the requirements of his patients. If the chemists of England will earnestly take this matter in hand, the trade and the public will soon be supplied with lints much more practically adapted to serve the purposes for which lints are required. Other important considerations in relation to lint might reasonably have been dealt with but for the title of this paper; one I cannot refrain from mentioning. It seems remarkably and painfully inconsistent that every emigrant vessel is compelled to carry a given weight of good lint proportioned to the number of passengers, while the sailors who man our navy, and are professedly our pride and our glory, and the envy of the world, must still be content, in active service, to have their wounds dressed by what is called marine lint, which is nothing other than a wretched compound of tow waste, held together by a solution of tar. It is fashionable at this moment to plead the cause of poor Jack; it would, perhaps, therefore now be seasonable for the chemists and surgeons of England to protest against such unscientific and inhuman treatment.

In conclusion gentlemen, the inferences I ask from the facts I have laid before you are, first that the lints generally sold under the name of superfine lints are not the most suitable for therapeutic purposes; secondly, that flax lints are, only very exceptionally, as useful for dressing wounds and sores as cotton lints; and lastly that all cotton lints ought to be made from cloth more open than the cloth they are generally made from. From such cloth, the lint will be much softer, have a faster pile, be more elastic, cooler and absorbent. If by these experiments and suggestions I shall in even a small degree have assisted the progress of therapeutic science, I shall feel a sense of moral gratification, which will more than repay me for the little duty I have undertaken.

GLYCERINE.

By ALFRED HENRY MASON, F.C.S.

GLYCERINE ($C_3H_5O_3$) was discovered by Scheele in 1779, who obtained it in the preparation of lead plaister. He named it "sweet principle of oils," from its sweet taste. Subsequently its properties were more accurately studied by Chevreux, in his classical investigations on the chemical history of bodies of fatty origin, and by Perrouze.

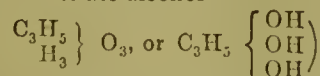
Most of the fats and oils of the animal and vegetable kingdoms have a constitution analogous to that of the compound ethers—acetic ether, for example. When acetic ether is treated with alkalies, it assimilates the elements of water, forming an alkaline acetate, and alcohol oils and fats in like manner undergo, by the same treatment, a similar change. They assimilate the elements of water, glycerine is set free, and a salt of the acid, previously in combination with glycerine, is formed.

A compound ether = acid + alcohol - water.

A glycerine salt = acid + glycerine - water.

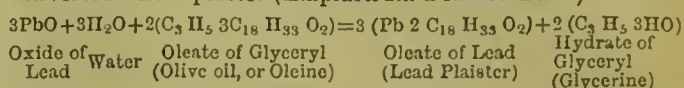
On this decomposition the methods of preparing glycerine are based.

Glycerine, as a triatomic alcohol



is present in the shape of glycerides, in combination with solid and fluid fatty acids, to an amount of eight to nine per cent., and may be separated by treatment with bases potash, soda, lime, baryta, oxide of lead, or with acids (sulphuric acid), and certain chlorides (chloride of zinc); also by means of superheated steam, or very hot water, without the formation of steam, in closed vessels. Glycerine is also formed as a constant product by the alcoholic fermentation of dextrose, levulose, and lactose. According to Pasteur's researches, the quantity of glycerine thus formed amounts to about three per cent. of the weight of the sugar.

Glycerine may be manufactured (1.) By saponifying oils with oxide of lead; *sic*, five parts of finely triturated lytharge are treated with nine parts of olive oil, or any other glyceride, and a small quantity of water, the mixture being constantly stirred, and the water removed, until the oxide of lead is converted into a plaster (Emplastrum Plumbi BPh.).



Insoluble lead salts in this case, the oleate and stearite of lead, are formed; warm water is then added, and the aqueous liquid decanted, filtered, and sulphuretted hydrogen passed through the filtrate, in order to precipitate a small quantity of plumbous oxide, which dissolves.

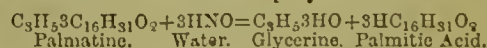
The liquid is then digested with animal charcoal, and evaporated *in vacuo*, or over a water bath, until of the required specific gravity.

(2.) From the alkaline mother-liquor of the soap-works (from which the soap has been separated by means of common salt) by neutralizing with sulphuric acid, removing the excess of that acid by carbonate of barium, evaporating the filtrate to a syrup, digesting it for several days with alcohol, separating the alcoholic liquid from the sulphate of sodium which crystallizes out, decolorizing with animal charcoal, again evaporating to a syrup, exhausting the residue with strong alcohol, and finally evaporating the filtered solution over the water bath.

This process is, however, too troublesome and expensive for use on the large scale; besides, it is found that by adding great excess of alkali the glycerine is taken up, and the soap produced is found to absorb and hold a much larger percentage of water, a desideratum to the manufacturer of cheap soaps.

(3.) From the residue of the manufacture of stearic acid for candles by lime saponification, when this process is used, the glycerine remains dissolved in the water after the separation of the insoluble lime soap. The lime also dissolved having been eliminated by either sulphuric acid, or, preferably, oxalic acid, the evaporation of the liquid to the consistency of a syrup will yield a glycerine pure enough for many technical purposes. This method, when properly carried out, yields a very pure product, and is the one principally used by Continental manufacturers; but it is somewhat complicated, and unless great attention is paid to every part of it, small quantities of lime are apt to remain in the glycerine, rendering it unfit for many purposes, especially for use in medicine and pharmacy.

(4.) By decomposing, or, rather, dissociating neutral fats by means of water, or of superheated steam; this is the best and only unobjectionable method of obtaining glycerine, and is the process brought to a successful issue by Mr. W. F. Wilson, F.R.S. It consists in injecting superheated steam, at a temperature of between 500° and 600° into heated fat. The fats assimilate the elements of water, and are decomposed into their constituents, the fatty acids (oleic, stearic, or palmitic, as the case may be) and glycerine. Both distil over, and form in the recipient two layers of liquid, of which the lower is tolerably pure aqueous glycerine. Supposing palmitine to have been the material employed—

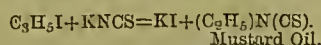


First we get a weak solution of glycerine, containing from twenty to thirty per cent., then by concentration rough glycerine. Brown glycerine is the product of a first distillation; pale glycerine, white glycerine, produced by further distillation, show the successive stages of advance to pure glycerine.

PROPERTIES.—Pure glycerine is a colourless, viscous, neutral, inodorous liquid, with a sweet taste, from whence it derives its name, *ψυκός*—sweet. Concentrated as far as possible *in vacuo* over sulphuric acid, it has the sp. gr. 1.28 at 59° (15°C). The glycerine of the British pharmacopœia has the sp. gr. 1.25, and contains five per cent. of water. Glycerine is difficultly volatile and only begins to distil unchanged at 518° Fahr. in a current of superheated steam, or in a partial vacuum; but it cannot be distilled in the ordinary way without much decomposition, intensely irritating vapours of acrolein being evolved. The vapour of glycerine is inflammable. Glycerine is uncrystallizable, at 40° Fahr. it becomes gummy and almost solid. It is mixible with water

and alcohol in all proportions, and is a powerful solvent.* Glycerine is insoluble in ether, chloroform, &c. It does not evaporate, but on the other hand is hygroscopic, attracting moisture from the atmosphere and becoming more limpid; like sugar it possesses strong antiseptic powers. By gradually adding glycerine to a mixture of sulphuric and fuming nitric acids carefully cooled, glonoin $C_3H_5N^3O_9$ (nitro glycerine) is prepared. On adding water to the solution nitro glycerine is precipitated as a heavy yellowish oil, soluble in alcohol and ether. It is a very unstable compound, and explodes when struck violently; it is largely used for various purposes, the preparation of dynamite and dynamite, &c.

Glycerine treated with iodide of phosphorous, whereby iodide of allyl is formed on being dissolved in alcohol and distilled with sulpho cyanide of potassium, yields sulphocyan-allyl., or artificial oil of mustard,



or if sulphide of potass is substituted, sulphide of allyl. $(C_3H_5)_2S$ essential oil of garlic is yielded.

VARIOUS APPLICATIONS.—As may be imagined, glycerine being a production in which so many wonderful properties are combined, its applications and uses are now manifold, and it appears remarkable that whilst so many sources of impure glycerine have long been known to exist, hundreds of tons being thrown away annually, it is but of late years that it has been in any way utilized, and now the demand for use in pharmacy, arts, and manufacture is with difficulty supplied.

In the beginning of 1844, Mr. Thomas De la Rue, being engaged in some experiments requiring the use of syrupy substances, procured from the Apothecari's Hall, London, some glycerine, some of which he applied to a burn and an irritation of the skin. The experience thus obtained of its properties of soothing and keeping moist led to its introduction into the Hospital for Skin Diseases, where it soon came into extensive use, and from this time it gained considerable favour with the medical profession, being even suggested as a substitute for cod-liver oil, or, at any rate, a vehicle to render that medicine more palatable. But the question of purity arose, most of the samples at that time being found contaminated with lead, even in those samples which were sold as "pure and free from lead;" but since the introduction of Mr. Wilson's process these contaminations need not be, and are rarely met with, so that now glycerine daily becomes more and more made use of in pharmacy and in the surgery.

It must be borne in mind that, in applying glycerine externally and internally, it should be previously diluted. Glycerine has a strong affinity for moisture; it takes it from the skin, and thus gives rise to a sense of burning; dilution with water will mitigate this, and in most cases prevent it. In pharmaceutical preparations glycerine may be used as a preservative agent, and to economize the use of alcohol. Its more important medicinal value is as a vehicle for the preparation of a great variety of remedies for both internal and external use. The therapeutic effects of some medicines are considerably modified by its use. Solutions in glycerine are practically found in the case of astringents to be much less active than solutions in water. Its usefulness as an application to the surface of the skin when dry and irritable is testified by the fact that almost every pharmacist now-a-days has his speciality in the shape of glycerine lotion, glycerine cream, &c., and the demand for the various manufactures of glycerine soaps.† Mr. F. A. Sarg. of Vienna, claims to be the introducer of these things, and he deserves praise for the perfection to which he has brought his glycerine toilet requisites; they really contain glycerine in very fair proportions.

Glycerine is largely used for cosmetics and perfumery, for keeping clay moist for modelling purposes; for preventing mustard from drying up, it is also useful as a lubricating material for some kinds of machinery, more especially watch and chronometer works, because it is not altered by contact with air, does not become thick at a low temperature, and does not attack such metals as copper, brass, &c. It is used

in making copying inks. It is an excellent solvent for many substances, including the tar colours (aniline blue), cyanine, aniline violet, and alizarine. In order to render paper soft and pliable, glycerine is added to the pulp. It enters largely into the manufacture of weavers' glue or dressing (which is composed of dextrine five parts, glycerine twelve parts, sulphate of alumina one part, and water thirty parts). By the use of this mixture the weaving of muslins need not be, as was formerly the case, carried on in damp darkened cellars, but may be performed in well-aired and well-lighted rooms. Santi uses glycerine for the compasses on board screw steamers, in order to protect the inner compass-box against the vibrations caused by the motion of the propeller. A mixture of nicely-powdered lytharge and anhydrous glycerine made into paste forms a rapidly hardening cement, especially useful as a cover for the corks or bungs of vessels containing such fluids as benzol, essential oils, &c., the cement being impermeable to those liquids. On account of its strong antiseptic powers glycerine has been successfully used as an agent in preserving animal and vegetable substances. For mounting botanical and zoological specimens as a substitute for alcohol, glycerine has been found preferable, as not being liable to evaporation, not combustible, and preserving the natural colours of the preparations more perfectly.

Glycerine is largely used in the process of calico-printing. It is also used under patent process in preparing paper for dry printing. When added to confectioners' wares, preserved fruits, and chocolates, it serves to preserve them from becoming dry; it serves a similar purpose in the manufacture of tobacco and snuff. The water in gas meters is liable to freeze in winter, or to evaporate too rapidly in summer; the addition of glycerine prevents these evils. Dr. Pohl and Le Pasteur have made many experiments with glycerine to apply it for sweetening certain wines which had become sour; and it has been successfully established that glycerine gives the wine a certain mildness and a reviving flavour, so that it may be of great service in time of a bad year's growth.

QUALITY AS IT EXISTS IN COMMERCE.—Many impurities are necessarily found in crude glycerine according to the process of manufacture, or the quality of water used in manufacturing; for industrial purposes these impurities are not objectionable or disadvantageous, if only present in moderate proportions. For medicinal use, of course, it is absolutely necessary that pure glycerine should be used, and the glycerine purified by Wilson's process, manufactured by Price's Patent Candle Co., is undoubtedly superior to any other I have examined. The fact that Continental manufacturers now offer medicinal glycerine, *à la Price*, inodorous, &c., would tend to substantiate this statement, and it occurred to me that it might be interesting to know how these various manufactures compare with Price's; hence the ultimate object of this paper.

I have selected nine samples to report upon, and these represent English and Continental manufactures.

The various chemical re-agents, shown with the results in the tabular form below, have been applied in the usual way, standard solutions being added to the specimen of glycerine (the glycerine previously diluted with an equal bulk of water), excepting the argentic nitrate—one part of solution was added to four parts of undiluted glycerine, and the mixture allowed to stand 24 hours. The specific gravity was taken at 60° Fahrenheit with Beaume's hydrometer, and several were taken by weight and found to correspond. The odour is easily ascertained by rubbing a little glycerine on the back of the hand; the peculiar mousey smell with some samples is easily detected, and this becomes more intense by heating a little of the glycerine in a test tube. Glycerine mixed with an equal volume of rectified sulphuric acid should not produce effervescence, or coloration, if sufficiently pure for medicinal use.

By adding absolute alcohol and concentrated sulphuric acid to glycerine, on heating, a fruity smell is set free, more or less intense, owing to the presence of butyric acid and (or) formic acid; the peculiar pine-apple odour is very strong in some samples, showing the formation of butyric ether.

For the detection of sugar and glucose in glycerine.—To five drops of the glycerine to be tested, add 100 to 120 drops of water, one drop of pure nitric acid, and one grain of ammonium molybdate, boil the mixture, and in less than two minutes it will assume an intense bluish-green colour if any sugar or glucose is present.

* An interesting table of the solubility of various salts in glycerine, by Klever, will be found in the Year Book of Pharmacy, 1870, page 166.

† Die Urtheile der Allgemeinen, "Wiener Medizinischen Zeitung über Glycerin," Jahrgang 1869-73.

TABLE OF ANALYSIS.

Sample.	Specific gravity Hydrometer.	Colour.	Odour.	Odour when heated.	Sulphuric Acid.	Argent. Nitrate.	Ammonium Oxalate.	Potass. Ferrocyanid.	Ammon. Sulphide.	Barium Chloride.	Litmus.	For Butyric Acid.	For Sugar.
A	31° B.	None	None	Very faint	No change	No change	No change	No change	No change	No change	No change	Slight smell	None
B	30° B.	"	"	Slight mousey smell	Slight Discolouration	"	"	"	"	"	"	Present	"
C	30° B.	"	Slight	"	"	Slight tinge	Slightly turbid	"	"	"	"	"	"
D	30° B.	"	"	"	No change	"	"	"	"	"	"	"	"
E	31° B.	"	Very faint	"	Slight tinge	Faint opalescence	No change	"	"	"	"	"	"
F	29° B.	"	Fatty	"	"	Slightly tinged	Slightly turbid	"	"	"	"	"	"
G	28° B.	Slightly tinged	"	Disagreeable, Fatty	"	More tinged	"	"	"	"	"	"	"
H	28½° B.	"	Mousey	More mousey	Discolouration	No change	No change	"	"	"	"	"	"
I	28° B.	Brown	Strong and fatty	Strong and fatty, very offensive	Intense Discolouration and disagreeable odour	Flocculent deposit	Great deposit	"	Discolouration & black deposit	Deposit.	Red.	Plenty, and disagreeable fatty smell	"

In the foregoing table, A represents Price's patent glycerine; B, C, D, E, F, were sold by Continental manufacturers as double distilled white glycerine, *à la* Price, inodorous, guaranteed to stand the nitrate of silver test (sp. gr. 30° to 31° B.); G and H, as refined glycerine (28° B. sp. gr.); and I is a sample of concentrated *crude* glycerine from Hamburg, as exported for manufacturing purposes. A, B, and H, have been exposed to strong sunlight in closed vessels for two days. A was unchanged, but B and H had the mousey odour very fully developed, but without discoloration.

It will be observed that there are slight impurities in B, C, D, E, but I think none to prevent the majority of the samples being used in pharmacy and medicine when not intended for internal administration.

I consider that pure medicinal glycerine should not be affected by nitrate of silver, sulphuric acid, oxalate ammonia, or exposure to sunlight, and should be perfectly free from smell after this treatment.

VARNISH FOR LABELS.—At a recent meeting of the Newcastle-upon Tyne Chemical Society, Prof. Marreco said that Prof. Markoe (of Boston, U.S.) told him, some months ago, that the practice in Boston was never to varnish a label for acid bottles, but to use paraffin instead. They had applied it to a large number of bottles in the college laboratory, and it answered perfectly. The only thing necessary was to brush the paraffin on as hot as possible, so as to get a thin even coating; it looked as well as varnish, and stood a great deal better. It saved a good deal of trouble in sizing and varnishing, and five minutes after the bottle had been brushed it was ready for use. Dr. Lunge said that he had read some months ago, in a German journal, that the use of paraffin could be extended a great deal further; that instead of sealing the tops of bottles—sample bottles of bleaching-powder, and for other purposes—it was very convenient to have a small porcelain dish with paraffin always ready, which could be placed upon a lamp, and, as soon as it was warm, to dip the top of the bottle in it, and that gave as good a sealing as sealing-wax, or better, and caused very much less trouble. It had also been proposed to use stoppers made of solid paraffin for caustic soda samples; but he did not like this, because they broke so easily. What he had found to answer perfectly well was to rub some heated paraffin upon the stoppers in place of tallow. He found it a great deal cleaner, and answering in every way for this purpose.—*Chemical News.*

Medical Gleanings.

THE General Medical Council has been sitting lately, and it will be no very arduous task to sum up the results of their deliberations. Dr. Embleton, the representative of Durham University, having resigned, his place was supplied by Dr. T. T. Pyle, who remained becomingly quiet during the session; with that exception, there was no change in the constituents of the Council, and all were present. The conjoint examination scheme, which, it will be remembered, a few years ago was, to the professional mind, the one thing needful, and which more than once the Council has imperially "willed," is still dodging about with a jack-o'-lantern sort of intangibility, and is more than ever distant of accomplishment. We have never regarded this proposal as anything better than a fancy well suited to keep the Council and the medical journals occupied, because, even in the improbable event of getting nineteen corporations in a frame of mind willing to sink their individuality, it is hardly likely a House of Commons would support the notion of a dead level in medicine, to the immense detriment of those classes to whom even the undignified general practitioner is sometimes useful. There is not much fear, we think, of any such scheme getting established in this country. But Sir William Gull sees no hope of blessedness until it does come to pass; so on the second day of meeting he came down on the "obstructives" as he termed them, which he intimated were usually Scotch, in a style which is not quite sufficiently expressed by the term energetic. Nothing could have better suited the taste of the two Edinburgh gentlemen, Drs. Alexander and Andrew Wood, who met Sir William on his own terms. Sir Dominic Corrigan, from Dublin, felt it hard to have to look on a row without taking part in it, so he joined in the *mêlée*, if not with the Scotch gentlemen, at any rate against Sir William. The battle was very flat, however, and no other opportunity occurred to renew it.

The majority of the Council feeling though not acknowledging it to be an impossible task to knit together their sandy materials into a decent rope, took to the usual resource, and sent a deputation to the Lord President of the Privy Council. The Marquis of Ripon said he would consult his colleagues, and he also promised to give his best consideration to any bill which a private member might introduce, but he was not prepared to introduce one himself. The Council was keen enough not to gather much encouragement from this reception.

Among other business transacted was the passage of a motion authorizing the reprinting of the British Pharmacopœia, with an appendix, supplying information respecting new medicines and new forms of medicine that have become established, or been introduced to the favourable notice of the profession.

The name of Dr. Bass Smith, so unpleasantly mixed up with the murdercase in Shropshire, was removed from the register, and one or two other cases of infamous conduct were carefully considered. The Council also discussed the medical education of women for midwifery practice, of which they seemed graciously to approve, though doubtless, most of them agreed with Sir William Gull, who believed "there was nothing in ordinary human affairs which a man did not do better than a woman in equal circumstances." That educated midwives would relieve the nobler sex, was however the general opinion, and the Committee appointed to consider the subject was re-appointed. During the meeting it was announced that the Chancellor of the Exchequer had caused Dr. Quain to be informed that Mr. Ayerton had been instructed to provide a house for the Medical Council, and that the one hitherto occupied by the savings bank at the corner of St. Martin's Lane, was to be got ready for them. Heretofore, the Council has had to borrow a room from the dentists in Soho-square for their meetings. The Council sat for nine days,

With something like regret we have noticed that both the *British Medical Journal* and the *Medical Record* (both under one editorial management) seem to have undertaken to become organs for the "new tea spirit, Robur." We should never write against any article simply because its proprietors choose to advertise it abundantly; but in this case there is a somewhat dangerous responsibility involved. We are not prepared at this moment, though we shall be soon, perhaps, to assert how much theine is contained in robur, nor how it gets there; but we do know that robur is an alcoholic beverage of about the strength of whiskey, and the greatest physicians of the day have united in expressing their belief that the encouragement of alcoholic drinks by medical men is a fearful and ruinous course to adopt. By the way, too, it was said that the editor of the *British Medical Journal* was the gentleman who drew up that celebrated manifesto against alcohol; and yet we have before us an article from that journal in which, after an elaborate preface written in the approved pseudo-scientific style, with much nonsense about the "combination of theine and tannin with alcohol," we read the following puff, for it is nothing else and we read it with extreme regret:—"That alcohol gives wings to tea, every one who has added a *chasse* to a cup of black coffee as a digestive after dinner, or has 'laced' a cup of tea with a liqueur of brandy after exhaustive fatigue, will readily testify. The same principle is involved in the composition of robur. It is a pure spirit, singularly free from fusel oil, with which most brandy and whisky are largely contaminated. It is extremely palatable—most so when mixed, like toddy, with hot water, and sweetened. It contains a considerable percentage of theine, with tannin and sugar. It leaves on the palate the pure flavour of tea, and no more wholesome spirit can be found. As a spirit intended for popular use, it has many great merits. It does not tempt to intemperance, for it rather helps than muddles the intelligence; and, if robur were substituted for gin, brandy, or whiskey, it would, we think, be a clear gain to the cause of temperance. The digestive properties which Dr. Lancaster asserts it to possess are such as have long been attributed to the *chasse café*, which it resembles in character. Medically, it is, we think, likely to be more useful than any of the forms of spirit which are in daily use. On the whole, we consider that no more has been claimed for it than is fairly its due, and that is a valuable addition to the dietetic list." We have italicized the passage which, in our opinion, is rather the worst of all. In the *Medical Record* we are told that "in the treatment of exhaustive diseases, wherever spirit is now employed, robur is, we think, called to render great services, and deserves a very ample trial."

On this subject we have much pleasure in quoting a letter addressed by Sir H. Thompson to the Archbishop of Canterbury in reference to the recent temperance movement in the Church of England. He says: "I have long had the

conviction that there is no greater cause of evil, moral or physical, in this country than the use of alcoholic beverages. I do not mean by this that extreme indulgence which produces drunkenness. The habitual use of fermented liquors to an extent far short of what is necessary to produce that condition, and such as is quite common in all ranks of society, injures the body and diminishes the mental power to an extent which I think few people are aware of. Such, at all events, is the result of observation during more than twenty years of professional life devoted to hospital practice, and to private practice in every rank above it. Thus I have no hesitation in attributing a very large proportion of some of the most painful and dangerous maladies which come under my notice, as well as those which every medical man has to treat, to the ordinary and daily use of fermented drink taken in the quantity which is conventionally deemed moderate. Whatever may be said in regard to its evil influence on the mental and moral faculties, as to the fact above stated I feel that I have a right to speak with authority; and I do so solely because it appears to me a duty, especially at this moment, not to be silent on a matter of such extreme importance. I know full well how unpalatable is such truth, and how a declaration brings me into painful conflict, I had almost said, with the national sentiments and the time-honoured and prescriptive usages of our race. Cherishing such convictions, I rejoice to observe an endeavour to organize on a large scale in the national Church a special and systematic plan for promoting temperance, and I cannot but regard this as an event of the highest significance."

It has recently been decided in certain county courts that only persons registered under the Apothecaries Act of 1815 could recover charges for medicines supplied. The Royal College of Physicians of Edinburgh has obtained an opinion from Sir George Jessel and Mr. J. H. Lloyd that licentiates of that college are entitled to recover in such cases. We presume the same opinion applies to all properly registered medical practitioners.

The London Hospital Sunday is fixed for June 13, and the Committee reports that it has addressed itself to 2,623 ministers of all denominations. Among these nine have positively refused to take part in the scheme, and some others from various causes will not be able to join the movement until next year. But, notwithstanding these very trifling obstacles, there is not much doubt that a collection will result worthy of the truly Christian object in view.

The wise man says "The liberal soul shall be made fat." If this promise may be taken literally, there must be some Daniel Lamberts in Monmouthshire. A medical officer is wanted for the Marshfield district, Newport Union; it is an agricultural district, area 14,417 acres; and for the services of the medical officer the munificent sum of £40 per annum will be given. But it was evidently feared that this extraordinary offer might attract too great a host of applicants, or that the successful candidate might "wax fat and kick" rather too lustily, so the proviso was inserted that the appointee should furnish all medicines (quinine and cod-liver oil excepted) and all surgical appliances. If the guardians of Newport Union carry out their arrangements generally on this magnificent scale there is every reason to expect that quinine and cod-liver oil must become almost necessities to the paupers. Whoever the successful candidate may be, we hope he will bear his sudden prosperity modestly and becomingly.

The *Canada Medical Journal* copies from the columns of the *Salt Lake Daily Herald*, a specimen of gratitude amongst the saints of Salt Lake City. A somewhat similar course is sometimes practised by the sinners of other localities:

"*Pro bono publico!*"—By God's Grace: I do hereby certify that on this blessed day of our Lord, December 24th, 1872, I called on Dr. Plant, Phillips'-buildings, Tenth Ward, of Salt Lake City, who, after prescribing certain remedies to him best known, &c., caused me to be delivered of a monster tape-worm, 123 feet long. And I do hereby tender my humble and heartfelt thanks to Dr. Plant, after being troubled with the monster twelve years, for such a deliverance.

Signed, this 24th day of December, 1872.
"Residence at Bingham Canyon. TUEVUM KEMPTON."

EXTRACT OF MEAT.

By BARON LIEBIG,

*President of the Royal Academy of Sciences at Munich.**

IN a letter by Dr. Edward Smith, which appeared in the *London Times* of October 16th, he reproaches me with several quotations contained in my letter of October 1st, which require on my part some vindication.

Dr. Smith says that the passages I have quoted on "economy of nutrition," "the small morsel of meat," "fish," "tea," are not extracts from any published work of his, and he calls upon me to explain as to where I had obtained my (most unaccountable) "quotations." My vindication is not a difficult one, and I gladly take this opportunity to explain more fully the real value of extract of meat for the alimentation of the people; the only unpleasant part of the task is, that in doing so I am compelled to speak more of myself than I like.

In the first place it is quite correct that the above-mentioned quotations have neither appeared in the article in the *Standard* nor in that of the *Times* of August 20th. They are taken word for word from an article entitled "The Butcher's Bill," which appeared in the *Saturday Review* of August 31st. This article is avowedly based on Dr. Edward Smith's views, so that any one who took the trouble to read it must, like myself, have arrived at the conviction that its sentences contained the authentic opinions of Dr. Edward Smith.

Dr. Edward Smith says, "Let it be clearly understood that at length Baron Liebig is in accord with other scientific men, and that all may adopt the words of Liebig. 'Neither tea nor extract of meat are nutriment in the ordinary sense,' and all I contend for is accomplished." This does not seem to say less than that I have now been converted to views which either I formerly had not, or which I even disputed, while the real truth is that all that has been ascertained within the last thirty years on these subjects is in perfect accord with my teachings. Thirty years ago I taught, in my "Animal Chemistry," that for the preservation of life the food of men, as also that of animals, must contain one indispensable element for the formation of blood or of the albumen in the blood. I have further explained, in my "Researches on the Chemistry of Food" (1847), that "beef-tea" or "extract of meat" contains none of the substances called albuminates, as these latter coagulate and separate when the meat is boiled in water. In my "Familiar Letters on Chemistry," xxix. p. 421 (edition of 1851), I said, "In the albumen of this fluid (juice of flesh) we have the substance serving as transition product to the fibrine of flesh, and in the other substances (contained in beef-tea) the matters required for the production of cellular tissue and nerves." From this it will be seen that I have never asserted that "beef-tea" or "extract of meat" contained substances necessary for the formation of albumen in the blood or of muscular tissue. I have, on the contrary, designated them as "food for the nerves," in the same sense as common salt is also designated as food, although one cannot always define in which manner it acts usefully.

It cannot, therefore, be said that "I am at length in accord with other scientific men," but that these scientific men, including Dr. Edward Smith, have simply adopted what I have always, and from the very beginning, taught. Based on my own definitions, Dr. Edward Smith informs me that extract of meat is not "food," but a "nervous stimulant." But what is a nervous stimulant? everybody will ask who is not satisfied with a word, but wishes for definition. We take the constituents of extract of meat in our daily food, just as we take tea and coffee in addition to our food, and nothing can be more undeniable than that these substances produce a certain beneficial effect on all the functions of the body and also on the process of nutrition. It is clearly not the duty of a scientific man to simply deny these effects, but to find out how great is the share these substances have in the functions of the animal organization.

Some years ago two physiologists at Vienna attempted to prove, by experiments on themselves, respecting the effect and value of common salt in the process of nutrition, that salt is a luxury, and of no value for nutrition and the pre-

servation of health. In matters affecting the alimentation of the people no importance can be attached to such trifling experiments, if they are in contradiction to confirmed experiences, and this contradiction will grow in the same proportion the less the experimentalist is capable of observing and rightly interpreting facts.

In order to comprehend the difference between "common food" and "nervous food," as I will call it, in order to avoid circumscription, it must be considered that man has two kinds of work to perform, muscular or mechanical work, and brain or nervous work. The one, the muscular work, is under the dominion of the nerves and the brain.

By "common food" must be understood those substances which serve for the preservation of the temperature and restoration of the machine. Coffee, tea, and extract of meat are not suited to these purposes; by their effect, however, on the nerves they exercise a decided influence.

The experiments made with extract of meat in Russia, France, and Sweden are what in the scientific world are termed "sham experiments." They are not undertaken to find out that which is not known, but, as the result is known beforehand, appear really only to be made with a view to deceive others, and the conclusions drawn from them are simply absurd. It will suffice to describe one of these experiments in order to convince any one who bears in mind that it has been scientifically determined that extract of meat does not contain any substances necessary for the formation of albumen in the blood, and for the restoration of the waste of muscular tissue.

Two dogs of almost equal weight were fed, the one with meat, the other with extract of meat. The former was fed with 400-500 grm. fresh meat, the other with 12½-15 grm. extract of meat (the quantity contained in 400-500 grm. fresh meat). The dog fed on meat flourished, his weight rather increased, while the other fed on extract of meat only, became thin, was attacked with diarrhoea, and would have died if the experiment had been continued. The inference drawn from this experiment is: Extract of meat is not nutritious, it rather has poisonous effects, causes diarrhoea, and would produce death. That the other dog had likewise consumed 12½-15 grm. extract of meat in the 400-500 grms. of meat without being seized with diarrhoea and feeling any injurious effect—this fact does not trouble the experimentalist; nor does it concern him that a dog weighing from 2 to 3 kilogrammes requires from 40 to 50 grm. of carbon in his food for the process of respiration and to keep up the weight of his body, while 12 to 15 grm. extract of meat only contain 3-4 grm. of carbon.

These experiments made by Dr. Beljowski, in Moscow, and the conclusions drawn from them, are identical with the French: *vide Moniteur Scientifique, Quesneville*, 1-15 Dec., 1871. That no experiments have been made in England similar to those in Russia and France proves that English physiologists possess more common sense.

Concerning the standing of Professor Almen, in Sweden, it will suffice to mention here his assertion that "a glass of warm water with a little pepper must produce the same effect as a cup of beef-tea." What sensible physician would venture to prescribe warm water with pepper instead of meat broth to a patient recovering from typhoid fever? Nor is this done in spite of Professor Almen, in the Swedish hospitals. Beef-tea is used there in the same cases and for the same purpose as with us.

That in Gottingen extract of meat is generally used in family households and also in that of Professor Mussner, I may venture to affirm.

In order to correctly understand the significance of meat diet and extract of meat, it is necessary to turn one's attention to the difference of the component parts of meat and those of vegetable foods. Meat contains in its albuminates the chief requirements for the renovation of the muscular tissues, and for the preservation of lasting muscular action. Those constituents of the meat which are soluble in boiling water take no part in the formation and renovation of the muscular tissues. But by their effect on the nerves they exercise a most decided influence on muscular work, wherein meat differs from all other animal and vegetable food.

By the use of meat we consequently obtain two effects, the one, effect on the nerves, perfecting and strengthening, the other, muscular action. The price of other articles of food, even of those containing a considerable amount of muscle-

* From the *American Chemist*, March, 1873.

forming material, is much lower than that of meat, and is not in proportion to the contents of muscle-forming substance. According to calculations made in my own household, we obtain in one 100 lb. of butchers' meat (67 lb. muscle, 12½ lb. bones, 8½ lb. fat, 3 lb. membrane) 13.9 lb. albuminates. In 100 lb. cheese there are from 26 lb. to 30 lb. albuminates, and likewise is the liver and brain richer in albuminates than the same weight of butchers' meat. The blood of animals is richer still in albuminates in proportion to its price. Nevertheless, nobody thinks of placing blood, liver, or cheese fully on a par with butchers' meat.

Vegetable albuminates are still lower in price, and from these is produced in the bodies of animals all the muscular food which man consumes. 100 parts of ordinary wheaten flour contain very nearly as much muscular food as 100 parts of fresh meat, but how small is the price of bread as compared to that of meat.

This clearly shows that the instinct of man discovered a difference in the effects of his various foods, and that he does not estimate and judge them in proportion to their contents of carbon and nitrogen, or of muscle-forming and heat-producing substances; but that he pays a higher price for meat because meat contains certain other substances which are totally wanting in other articles of food, and it is these very substances which form the component parts of beef-tea as well as of extract of meat.

These substances, as is well known, impart to meat its peculiar value for nutrition, and form the difference between vegetable and animal diet. The difference between the two, therefore, is not based on the dissimilar nature and facility of assimilation of the albuminates, contained in the animal and vegetable food, but in the fact that meat contains certain elements which are not to be found in cheese, in blood, and in vegetables.

I believe that the researches of Pettenkofer and Voit are calculated to throw some light on the effects of the component parts of extract of meat. In their experiment on the tissue waste of a man in normal condition while abstaining from food, the individual breathing in the apparatus of respiration was left in three instances without food with the exception of water, salt (15 grm.) and a little extract of meat (12½ grm., rather less than half an ounce), and with respect to the results obtained the two experimentalists say, "The state of health during the privation of food for thirty-six hours was a completely normal one, and according to the assurance of the fasting man, he could have borne it longer." This fact explains, I believe, the physiological importance of the soluble parts of meat or extract of meat; they do not serve for the renovation of the machine, but they maintain it by their effects on the nerves during temporary disturbances, even when deprived of food, in normal action, and it cannot be doubted that it is this effect which is paid for by the higher price of meat.

London navvies who were sent out during the Crimean war to construct the railway at Balacava, and who, according to the report of Dr. Baudin, created by the extraordinary amount of work they performed the greatest astonishment among the English and French soldiers, consumed daily in their food from 150 to 159 grms. albuminates.

The agricultural labourer in Upper Bavaria consumes in his farinaceous food, according to the experience and calculations of Professor Dr. H. Ranke, 153 grammes, therefore almost the same quantity of albuminates as the English navy, but how extremely different are the working capabilities of the English and Bavarian labourer in reference to the energy of work, i.e., the amount of work accomplished within a given time, and this difference is attained by the English navy consuming more than one-half of the albuminates in the shape of meat, whilst the Bavarian eats meat only on six days of the year. A few slices of bread and butter with milk at breakfast give nutriment enough for a child; an adult, however, has very different work to perform, and he therefore increases the effect of his food by a cup of tea or coffee. It is stated in Frankfort-on-Maine as a well-known fact that old Mayer Anselm Rothschild, the founder of the eminent firm, never despatched any important business at night without having previously taken a cup of strong black coffee; and it may be supposed that the celebrated financier derived some advantage from the effect of the coffee on his decisions, for he was not the man to spend anything for anything which would not have given him a return.

When the meat by boiling has been freed from its soluble parts, the remainder, or more correctly the albuminates in such residue, have no greater nutritive value than the gluten of wheaten flour, which remains after the manufacturing of starch. Both the meat albuminates and the gluten are chemically and in their physiological effect identical things.

If, to meat exhausted in this way, the extracted parts are readded in the shape of beef-tea or extract of meat, it is eagerly eaten by dogs who despise it without such addition; in fact, all component parts of meat are thereby reunited which are contained in roast meat.

Now, as vegetable albuminates are identical with albuminates contained in the flesh of animals, it will be easily perceived that if we add to our vegetable food, being rich in vegetable albuminates, for instance to bread, peas, beans, or even potatoes and rice, the soluble parts of meat such as are combined in extract of meat, we thereby impart the peculiar nutritive value to it which distinguishes meat in our estimation from other food.

Dr. Gerhard Rohlf, well-known by his travels in Morocco, says, in reference to the effect of extract of meat, in a letter addressed to me: "As regards extract of meat, it has proved, particularly to us travellers in Africa, one of the greatest blessings. On my travels through the great desert from Tripolis to the Tschad Lake, it was my daily food. Being without any meat, I took it in the morning spread upon biscuits, and this was not only very palatable, but it proved a complete substitute for meat diet. In the evening, I made beef-tea, adding a good portion to rice, lentils, or kuskuss, or whatever I happened to possess in the shape of vegetables. I have become so accustomed to the extract of meat that I am still obliged to keep it constantly in my house."

It will be well understood, therefore, that by the addition of extract of meat to our food, we neither economize carbon for the maintenance of the temperature, nor nitrogen for the sustenance of the organs of our body, and that it therefore cannot be called "food in the ordinary sense," but we thereby increase its working capabilities and its capacity to resist exterior injurious disturbances—i.e., to maintain health under unfavourable circumstances. Thus an addition of extract of meat to vegetable food forms the only means to make up for a want of meat.

All this taken together gives to these substances, to which also belong tea and coffee, a very high value in the alimentation of our populations, the last and true object of which is the production of working power for mental and bodily work; and it becomes perfectly intelligible why the great historian Macaulay devoted very properly, in his celebrated work, an entire chapter to the introduction of coffee into England as being to some extent connected with modern life.

For our object it is tolerably indifferent with what name is designated the effect of the so-called "nervous stimulants."

A few years since agriculturists still considered gypsum, lime, and bone meal to be stimulants for the growth of plants; now we know perfectly well that they are nutritive substances for plants. In modern life men on the whole perform more muscular and brain work than formerly, and the average duration of life of individuals has not decreased but increased, and nobody who takes a comprehensive survey of life can doubt that coffee and tea contribute largely to this end, and that extract of meat properly used is a really good and a most useful thing.

In conclusion, it may be mentioned that I have given my ideas on this subject in two treatises, both of which appeared in English scientific journals; the one "On the Nutritive Value of Different Sorts of Food," in the *Lancet*, January, February, and March, 1869; the other in the *London Pharmaceutical Journal*, "The Source of Muscular Power," September and October, 1870; and I think that no English physician wishing to criticize my opinions should be allowed to ignore these two treatises of mine.

One word more about Dr. Edward Smith. It is a pity that he thinks himself competent to give his opinion on questions of which he cannot be said to have a perfect knowledge. This becomes evident as soon as he touches on chemical subjects. For instance, in a letter to the *Standard* (October 24, 1872), Dr. Edward Smith declares that beef-tea made of fresh soup meat would certainly contain albumen, etc., and he charges me with hardihood for comparing extract of meat with such beef-tea. Dr. E. Smith apparently forgets

that the soluble albumen of meat is coagulated by boiling it with water, exactly in the same way as the albumen of eggs, and that, therefore, beef-tea cannot contain albumen any more than extract of meat. Both extract of meat and beef-tea are prepared from the same material, exactly in the same manner, and the difference of the former from beef-tea consists simply in extract of meat being beef-tea condensed to the consistency of honey.

ASBESTOS.

A GOOD authority in commercial matters thinks that Asbestos is the "coming" material. It is capable of application in so many ways, and possesses such wonderful properties, that there can be little doubt that further investigation into the methods of obtaining and manipulating it is likely to well repay the investigator. We have heard that an attempt is now being made to manufacture ladies' dresses of it, and it is said that such dresses will present a beautiful appearance. Their indestructibility will probably be a drawback in the opinions of the wearers, but husbands and fathers will find an asbestos dress a novel and economical present. Clothed in asbestos ladies will be as impervious to fire as were Shadrach and his friends. In the *Journal of Applied Science* for April, Mr. P. L. Simmonds gives some other interesting particulars respecting this material, from which we get much useful information. "Asbestos," he says, "is a mystery. When all its properties are known, the substance itself is still more puzzling. In appearance as friable and perishable as thistledown, it is older than any order of animal or vegetable life on earth. So little amenable is it to the dissolving influences of time, that the action of unnumbered centuries, by which the hardest rocks known to geologists are worn away, has no appreciable effect on this strange substance, which is found embedded in them. With its greater proportion of bulk, composed of the most rough and gritty materials known, it is itself as smooth to the touch as soap or oil, and may be made as light and buoyant as feathers. Apparently as combustible as tow, the fiercest heat cannot consume it, and the thready filaments may be mingled with molten brass or iron without losing their characteristic form. Finally, no combination of acids at present known in any way affects the appearance and strength of its fibre, even after days of exposure to their action. The name of this article is derived from the Greeks. "Asbestos" literally means "indestructible"—a title which is very thoroughly earned by this strange substance. It is, moreover, so unassailable by all known solvents that it is a virtual impossibility to analyse and give its component parts with exactness. Enough, however, is known or guessed at, to enable us to speak of it as consisting of from fifty to sixty parts silex, ten to twenty parts magnesia, about the same proportion generally of aluminum, some traces of protoxide of iron, and occasionally a lime-like mixture. These proportions vary greatly in the hundreds of different varieties of asbestos known, and govern and regulate exactly its value for practical purposes. Asbestos is a mineral. It is found in nearly every part of the world, and occurs in distinct veins and seams, usually in the serpentine formation of rocks. In order to procure it, it is necessary to mine in regular form, and to work the lodes or seams by blasting and tunnelling. This, in many cases, is a very costly process, as the rock in which it is found is extremely hard. The seams vary greatly in size, width, colour, and general appearance in different parts of the world. In fact, no two are exactly alike, but they have almost universally the same dip and inclination. The marvellous properties and consequent prospective value of asbestos to mankind, have been known to some extent and appreciated for thousands of years, and vast sums of money have been expended in endeavouring to make it available; but up till within a few years these experiments have for the most part resulted in failure, from the fact of the varied and dissimilar peculiarities of the different species—such, for instance, as the length, strength, and fineness of the fibre, excess of magnesia or aluminum, etc., being unknown. Having neither experience nor theory to guide them, the experimenters have invariably misdirected their energies, by using the wrong or the unselected and unprepared species for their different works, and, consequently,

their efforts have been unavailing. The rock upon which all have heretofore split has been the mistaken impression that all asbestos is of the same nature. This is correct in the abstract. It is true that all asbestos is extremely refractory—insensible to the action of acids, moisture, or decay. Yet it is not true that all asbestos may be treated alike; or, if treated alike, similar results will accrue. For instance, paper can be made from asbestos, and of excellent quality, too. Still there is only one, or at the furthest, two kinds of asbestos that can be made into paper at all, and that only by proper and peculiar treatment. This also is the case as to thread and cloth, and, in fact, with reference to any and all other applications of asbestos. A manufactory has been established in Glasgow for the production of steam packing from asbestos. In this particular branch of manufacture, more than any other, is a thorough knowledge of asbestos necessary, for so terribly destructive are the influences to which steam packing is exposed, that out of samples from more than one hundred mines in the United States, Scotland, Ireland, the Shetland Islands, Wales, Savoy, Piedmont, Germany, Austria, and Corsica, only two have been found which answered the purpose at all, and one of these only indifferently. The complex requisites in asbestos to make satisfactory packing are so numerous and peculiar that it would be tiresome to enumerate them. The manufacture of asbestos steam packing is a simple and beautiful process. The raw material is brought to the manufactory in considerable quantities from different parts of the world. It comes in sacks, and looks like chips and blocks of wood, but of a beautiful white colour. Experiments and study have demonstrated to the proprietors the best method of disintegrating and picking apart these chips and blocks, and reducing them to a fibrous condition like flax, jute, or cotton. The material once properly opened up, it is, by means of machinery, which is both simple and ingenious, formed into packing of the usual market sizes. These machines are as easily attended as weaving looms, and each is under the care of a young woman, who, after a short time, becomes expert in the business, and is capable of turning out a first-class article. It is compactly reeled up in coils as made, and when of proper size is securely tied, covered with bagging, and sent to all parts of the world. Although the business has been in operation little more than a year, the consumers of asbestos packing express themselves in the warmest manner as to its desirable properties and durability. In fact, the first packing in an ocean-going steamer was put in more than sixteen months since, and is still apparently as perfect as ever. The vessel alluded to is the *Anglia*, one of the Anchor Line Transatlantic passenger steamers. She has made fourteen round trips to America and back, having steamed on the same packing over 98,000 miles. The case is similar with the first locomotive engine to which it was applied in Great Britain. The original packing, put in on 28th July, 1871, remained in eleven months and twelve days, when the engine went into the repair-shop for overhauling, and the packing was taken out, it was apparently as fresh and useful as when first put in. The engine was an express passenger locomotive on the Caledonian Railway, and ran over 50,000 miles on the same packing. The practical uses to which it is not only possible but probable that asbestos will be put are almost numberless. Occupying as it does the position of a connecting link between the vegetable, and mineral kingdoms, and possessing the properties of all, scarcely too much can be claimed for it in regard to its adaptation to useful appliances. Asbestos boats, tubs, boxes, waggon bodies, and even railway carriages, which will neither rot, burn, nor splinter, are perfectly practicable and possible. Some of the gentlemen connected with the Glasgow works, have, during the past five years, made many curious and interesting experiments with it, and from the experience thus derived have covered many uses of the material with patents in Great Britain and in other countries."

THE *Court Journal* assures us that a soldier called upon a London chemist the other day, and said he had been hurt three weeks since, between Crewe and the depot. The chemist, not knowing the locality of Crewe on the map, supposed it to be in the internals, and said he had no doubt a wound was dangerous in such a place, and he had better go to Charing-cross Hospital. Geography must be added to the Preliminary Examination.



THE PHOENIX PAINT MILL.

MR. W. H. CRANSTONE calls our attention to the merits of this mill, which is designed to meet the wants of those who seek for a good article at a reasonable cost; and



judging from the extremely low figure, 15s., put upon it, and its general capabilities, we think the trade will be induced to give it a fair trial. The maker asserts that it will be found quite as useful as many mills costing three times as much, and that it will grind from one to one-and-a-half cwt. per day; so that it will be valuable to all who mix or sell paints, or colours of any sort, for it is made to mix thoroughly, as well as grind, and thus does away with the necessity of using strainers, or of reducing and grinding the colours on a stone slab, which is a tedious, dirty occupation at the best of times.

Mr. Cranstone has a larger paint mill for wholesale manufacturers, which is powerful and large enough to grind from one to two tons per diem, by steam or water power. This mill can be fitted with a pugging and mixing apparatus at a small extra cost, and is so arranged as to be readily taken to pieces for cleaning.

AN American druggist sent a valentino to his love, and somebody published it. A snatch from the composition runs thus:—

"O that thou
Wert carbon, and myself hydrogen!
We would unite to form olefiant gas
Of common coal or naphtha. Would to heaven
That I were phosphorus and thou were lime,
And we of lime composed a phosphuret.
I'd be content to be sulphuric acid,
So that thou might'st be soda. In that case
We should be Glauber's salt. Wert thou magnesia
Instead, we'd form the salt that's named from Epsom
Couldst thou potassa be, I aquafortis,
Our happy union should that compound form,
Nitrato of potash.

Sweet, thy name is Briggs,
And mine is Johnson. Wherefore should not we
Agree to form a Johnsonato of Briggs?"

TREATMENT OF SCABIES.*

TRUE mange being a contagious disease, it is essential that all animals suffering from it should be isolated, and all objects with which they may have come in contact, purified. Thus, with horses the clothing is to be boiled in a solution of soap and carbolic acid; and the harness, saddle, and grooming utensils washed with warm soap and water, and dressed with a solution of arsenic or corrosive sublimate, in the proportion of ten grains to the ounce of water. After being so washed and dressed, they are to be kept for several days exposed to dry air, washed again with soap and water before they are used; and before they are again put on the horse, they should be sprinkled on the side next to the horse's skin with sulphur. These may seem useless precautions, but in many cases the harness and clothing are lined with thick scabs, containing the ova of the parasites, the vitality of which is so great as almost to defy all efforts to destroy it.

Pastures in which scabby sheep have been grazing should be kept empty for some weeks; all posts and other rubbing places should be examined, and purified with carbolized whitewash, and all adhering portions of wool carefully removed and burnt.

Scabies being a local disease, is curable by topical remedies, and it may always be got rid of by frictions with the simple sulphur ointment. For horses, dogs, cattle, and cats, this alone is generally sufficient, provided it be properly applied, and no part affected with the disease left untouched with the remedy. The sulphuret of calcium is also highly recommended, more especially for scab in sheep, or diffuse mange in other animals, where it would be improper to cover a large extent of skin with an impermeable coating. It is made as follows:—2 lbs. of sulphur, 1 lb. of quicklime, and 16 lbs. of water. These are to be boiled together, continually stirred, until the ingredients are combined.

In horse mange the unguentum staphysagriae is a most effective remedy, and I should conclude that a decoction of stavesacre would prove as effectual in sheep scab; but I have no actual experience in the matter. The formula for the ointment is as follows:—

R Pulv. delphini staphisagriae,	℥ij.
Adipis, vel. ol. palmæ, ...	viij.
Ol. olivæ ...	3j.

Mix, and digest at 100° in a sand-bath, and strain. M. Bourguignon, with his microscope, watched with great care the effects of various remedies on the acari, and arrived at a conclusion that the most energetic remedies that could be employed for their destruction were solutions of the iodide of potassium and of the iodide of sulphur, which killed them in eight minutes. A solution of the extract of staphysagria was the next in virulence, destroying the acari in fifteen minutes. To prove the relative value of these two remedies, the following experiments were made:—The hands of an itch patient were immersed in a solution of the iodides for two hours, so as to strongly impregnate and colour the integuments. On examining the acari immediately afterwards, they were as lively as ever, but on the next day they were all dead, and the eggs destroyed. The epidermis was greatly shrivelled, and in three days complete desquamation occurred, carrying with it acari, grooves, and eggs, and leaving the cutis raw and tender. The action on the skin was evidently too strong. A bath of a solution of the alcoholic extract of stavesacre was then made, and immediately after two hours' immersion of the hands, all the acari were found dead, and, with one exception, the eggs destroyed. So far from irritating the integument, this application at once caused the itching to cease, and produced such a calmative effect that M. Bourguignon proposes it as a local remedy for inflammation. The eruptions also appeared to be rapidly cured by it.

Horses, cattle, pigs, dogs, and cats should be thoroughly washed with soft soap and warm water, before any remedy is applied to the skin for the destruction of parasites and the cure of mange; and no remedy should be allowed to remain on the skin for more than three days, at the end

* Extracted from Professor Williams' new work on "Veterinary Surgery."

of which time the animal is again to be washed and the remedy reapplied. When the disease is due to the sarcoptes, the ova are again contained in galleries beneath the epidermis, and it is very possible that all are not reached by the dressing until the animal has been dressed three or four times.

Smearing sheep with greasy ointments, or dressing them with oil of tar or mercurial ointment, is a very dangerous practice, and often causes many deaths. They prove injurious to the animal, by clogging the wool and rendering the skin impervious, thus preventing the cutaneous exhalations, and causing the accumulation of effete materials in the blood—carbonic acid, ammonia, and other organic products—which are naturally thrown off through the pores of the skin. The symptoms of the disease so produced are hurried breathing, small frequent pulse, blood-shot eyes, and a discharge of frothy mucus from the nose and mouth. The *post-mortem* appearances are congestion of the lungs, the trachea and bronchii filled with mucus, and the great veins filled with a dark-coloured semi-coagulated blood.

In mercurial poisoning the symptoms are those of insalivation, purging, redness of the skin, fetor of the breath, and rapid sinking.

Treatment.—The animals must be clipped and thoroughly washed with soap and water. They must be supported by stimulants, such as wine, whisky, or other spirituous liquors, afterwards treated with great care, and have good food and warm shelter.

GERMAN CHERRY JUICE.

A USEFUL article, under the above title, appears in the *American Journal of Pharmacy* for March. It is written by Dr. A. W. Miller, and as the facts and formulæ given by him will very likely be useful to some English readers, we make use of them.

This German cherry juice is largely imported into the United States, mainly for the benefit of the liquor trade. It pays an *ad valorem* duty of 25 per cent., and then is sold by importers generally rather less than one dollar per gallon. The bulk comes from the vicinity of Magdeburg, where it is obtained by expressing the common black cherries, which are there cultivated for the manufacture. It is exported in casks containing from 150 to 200 gallons.

Dr. Miller carefully distilled some of the juice, in order to ascertain exactly the proportion of alcohol contained in it, which he concluded to be about 12½ per cent.

"This small proportion of alcohol," he continues, "cannot be held to detract from its merits, as it can readily be expelled by heat, and wherever the arrangements are such that it can be recovered by distillation, it will positively add to the money value, being worth nearly double that which has been paid for the article.* The fact of the juice being perfectly clear and transparent, so that it will mix in all proportions with syrupy and alcoholic liquids without producing the slightest turbidity, is another important point in its favour. Besides this, the juice is always ready for immediate use, requiring neither filtering, straining, nor any other troublesome and tedious preparation, and it is not nearly so liable to spoil as solutions of cochineal. Indeed, it will be very difficult to find any other article by means of which an equally beautiful tint can be given to elixirs. Curacao cordial, or other elegant pharmaceutical preparations, and particularly in so convenient a manner.

"Cherry juice seems also to be specially suited for the compound syrup of phosphates, with the colouring of which most manufacturers have heretofore had trouble. Used in the proportion of one ounce of juice in a pint of the syrup, it produces a brilliant claret red colour, which is not affected by either muriatic or phosphoric acids, and which is neither precipitated nor bleached by exposure to the light. The fruity flavour imparted to the syrup, of course, is rather an advantage than otherwise.

"Soda water syrups, prepared from strawberry and raspberry juice, particularly when it is a year old, have often less colour than is desirable. While most druggists are reluctant

to add aniline or any other artificial colouring matter, there can be no possible objection raised to the crimson-tinted cherry juice, about four ounces of which will be found sufficient to bring a gallon of strawberry syrup to the proper shade. Professor Parrish, in his 'Practical Pharmacy,' highly recommends the admixture of black cherries with raspberries in the preparation of the syrup, and the same suggestion occurs in several French works. For enriching the colour of raspberry syrup, eight ounces of cherry juice can be used advantageously to a gallon.

"The following formulæ illustrate some additional applications of cherry juice in the drug business. All have been thoroughly tested, and most of them have been in use for some time, having met with general approbation among the consumers:—

Cherry Soda Water Syrup.

German Cherry Juice	. . . . .	1 quart
Water	. . . . .	1 quart
Best Crushed Sugar	. . . . .	7½ lbs.
Citric Acid	. . . . .	½ oz.

"Boil in a porcelain capsule and strain. This yields a finely flavoured and richly tinted syrup, which is much admired by the frequenters of the fountain.

Cherry Wine.

German Cherry Juice	. . . . .	3 quarts
Grape Sugar Syrup	. . . . .	1 pint
Simple Syrup	. . . . .	1 pint

"This furnishes a cheap, palatable and gently stimulating beverage. Its taste resembles the best of the popular domestic fruit wines.

Cherry Jelly.

Cox's or Cooper's Gelatine.	. . . . .	1½ drachm
Wash with cold water, and add		
White Sugar	. . . . .	1 ounce
German Cherry Juice	. . . . .	½ "
Boiling Water	. . . . .	5 ounces

"Stir until all the gelatine and sugar have been dissolved, and then set aside in a cool place to gelatinize. As a pleasant variation in the diet of invalids, this can be highly recommended. It is also occasionally acceptable as a dessert for the table.

"Translated into the language of the kitchen, the above may be directed to be made by putting two heaped spoonfuls of Cox's gelatine into a coffee cup, washing it with cold water, adding a heaped tablespoonful of sugar and one tablespoonful of cherry juice, then nearly filling the cup with boiling water, and stirring until all is dissolved.

Imitation of the Syrup of Red Oranges of Malta.

(Sirop d'Oranges rouges de Malte.)

Simple Syrup	. . . . .	1 gallon
German Cherry Juice	. . . . .	6 oz.
Essence of Curacao orange (containing 2oz.		
of oil in a pint)	. . . . .	½ oz.
Citric Acid	. . . . .	1 oz.

"The quality of this syrup depends almost entirely on the purity and freshness of the essence of Curacao, which is difficult to obtain of good flavour. The syrup itself should be made in small amounts, as it is liable to be changed to an unpleasant rancid flavour on long exposure.

Imitation Strawberry Syrup.

Simple Syrup	. . . . .	1 gallon
German Cherry Juice	. . . . .	4 oz.
Tincture of Orris Root	. . . . .	1 oz.
Citric Acid	. . . . .	6 drachms
Strawberry Flavour	. . . . .	3 "

Imitation Raspberry Syrup.

Simple Syrup	. . . . .	1 gallon
German Cherry Juice	. . . . .	8 oz.
Tincture of Orris Root	. . . . .	2 oz.
Citric Acid	. . . . .	6 drachms
Raspberry flavour	. . . . .	3 "

"The compounders of liquors use cherry juice chiefly, if ne

* Such a process, we need hardly remark, would be illegal in this country.

exclusively, for manufacturing cherry brandy (known also as chorry bounce or guignolet), blackberry brandy, and an imitation of port wine. For the benefit of those who may be desirous of knowing the composition of these fancy liquors, which have a large sale in the South, the following receipts are appended, which have been obtained from trustworthy sources :

Cherry Brandy.

German Cherry Juice	15 gallons.
Pure Rectified Spirits	20 "
Simple Syrup	5 "
Oil of Bitter Almonds	1 drachm.

"Rectified spirit is understood to be whiskey, which has been thoroughly deodorized by percolating through charcoal, and which is of first proof = 50 per cent alcohol.

Blackberry Brandy.

German Cherry Juice	3 gallons
Pure Rectified Spirits	25 "
Simple syrup	5 "
Clear water	5 "
Oil of Cinnamon	1 drachm
Oil of Cloves	1 "

"The oils are to be first dissolved in about a pint of alcohol, or high wine, and then to be mixed with the spirits before the addition of the other ingredients.

Imitation of Port Wine.

German Cherry Juice	15 gallons
Pure Rectified Spirits	10 "
Clear Water	10 "
Simple Syrup	4 "
Tincture of Rhatany	1 pint
Port Wine Ether	2 ounces

"It is claimed that fictitious port wine is not at present manufactured in this country, as the same thing can be done abroad at a much lower figure. It is stated that ordinary port wine, which is not by any means the pure juice of the grape, can be imported for somewhat less than 70 cents per gallon. Under these circumstances, it is, of course, in the interest of liquor merchants to sell wines 'strictly pure as imported' or 'in bond,' rather than to trouble themselves unnecessarily in compounding them here."

THE NITRATE OF SODA MONOPOLY IN PERU. — Considering that the recent action of the Peruvian Government, in making a monopoly of nitrate of soda, has attracted a considerable amount of attention in the trade, we may usefully give the precise terms of the Act, which consists of seven articles as follows :—Art 1. Saltpetre is a monopoly in the Republic. Art 2. The State will pay on delivery and in cash 2 soles 40 cents for each quintal of saltpetre, the grade of which is not less than 95 per cent., placed alongside the launches in Iquique, or in any of the ports or bays which may be qualified in the provinces of Tarapaca. Should the State be able to sell the saltpetre at a higher rate than 3 soles 10 cents. per quintal, the price of 2 soles 40 cents. will be augmented by half the excess. Art 3. The Government will take as a base, the production of saltpetre in the year 1872, and the producing power of the manufactories on which money has already been laid out, and will make the necessary regulations to establish the monopoly and sale of saltpetre. Art 4. The adjudication of saltpetre grounds is prohibited in every part of the Republic. Art 5. The exportation of the earth from which the saltpetre is extracted, is entirely prohibited. Art 6. The exportation of saltpetre which has not been bought from the State, and which it may be sought to export in infringement of this clause, will be confiscated. Art 7. The Government will inform the next Congress of the results of the monopoly, and are prohibited from making any agreement which may compromise for more than two years the interests attached to it. Every contract, whatever may be its nature or form, which is binding on the State for more than that time, is null, and of no legal effect. This law will come into operation two months after its promulgation, from which date all the saltpetre which may be exported from the Republic, will be subject to its regulations.

THE MEDICAL TREATMENT OF CHILDREN.

FROM a series of papers now publishing in the *Medical Times and Gazette*, written by Dr. Eustace Smith, we extract the following useful remarks :—

In the prognosis of disease in children it is necessary to speak with much caution, for changes in them take place with great rapidity, and the expectations of one hour may be completely falsified by the next. In the early stage of an acute disease we must not allow ourselves to be deceived by the seeming severity of the symptoms, nor, when the disease is fully established, must we too hastily assume, however grave the condition of the patient, that the case is necessarily a hopeless one. In early life the re-adjusting power of nature is very great, and instances of unlooked-for recovery must be familiar to everyone whose practice has lain much amongst young children. When physic has become useless, careful nursing still remains; and the aphorism "as long as there is life there is hope," is especially true in the case of children. On the other hand, we must be careful not to err in the opposite respect, and to pronounce too favourable an opinion in a case of serious disease because the symptoms for the time are mild; for, if cases frequently change rapidly for the better, they also often change rapidly for the worse. Indeed, sudden death is not at all uncommon in very young children, especially in cases of acute disease where the strength has been very suddenly reduced; and chronic diseases sometimes end very abruptly.

Children are more amenable than adults to the action of drugs, and the treatment of their diseases is consequently more easy. But treatment does not consist entirely, or even principally, in the administration of medicines. By attention to diet, hygiene, and the general management of a child we can exercise a very important influence upon the course and termination of an ailment; and the mere giving of physic is only a small part of the duties of a physician.

In treatment, our first object should be to remove, if possible, the cause of the disorder. The cause is, however, often obscure, or, if detected, may be no longer in existence, the disease being merely the effect of some transient impression which has ceased to operate. In most functional derangements, however, especially those affecting the alimentary canal, some error in feeding or in management may usually be discovered, the remedying of which will produce an immediate improvement in the symptoms; and in all cases the cause or causes should be diligently searched for, and the removal of them, when found, should be looked upon as the first and most important step in the treatment. Without this preliminary step, indeed, treatment will often meet with little success. Thus, in the case of rickets, we shall find very little benefit from the administration of tonics and cod-liver oil so long as the child continues to be fed on indigestible food, and to live in a close, ill-ventilated residence. Here treatment consists essentially in removing the causes which are producing the disease; for cleanliness, fresh air, and a nutritious, digestible diet will by themselves be sufficient in mild cases to cure the disease without any aid from drugs being required.

Indications for treatment are also furnished by the nature and seat of the disease; but in following such indications we must not allow ourselves to be led away too much by narrow rules as to drug-giving. In all cases we should be careful to treat the patient rather than the disease. Our object is to hasten the restoration of the child to health; and this end will be gained far more effectually by attending carefully to symptoms—general as well as local—rather than by pursuing any one rigid line of treatment to which the malady is expected to succumb. It is, indeed, especially the case with children that the consideration of symptoms is of such great importance, whatever be the nature of the disorder; and in many cases treatment must be directed exclusively to these, although they may arise from a distant organ, and be the result of the general disturbance produced in the system through sympathetic irritation excited by some general or local ailment. Thus, the vomiting which frequently accompanies the onset of fevers and local inflammations may assume so violent a character as to place the life of the patient in peril. The beginning of variola is especially liable to be accompanied by excessive vomiting. In such a case treatment must be directed at once to control the dangerous symptom, and this irrespective of the seat or nature of the complaint in the

course of which this complication has arisen. So also in cases of sympathetic convulsions occurring in the course of an acute disease; measures must at once be taken to quiet a perturbation of the nervous system which might exercise a very unfavourable influence upon the termination of the illness.

In acute cases the treatment will vary very much according to the age of the child, according to the presence or absence of diathetic or constitutional conditions, and especially according to whether the case be one of primary or secondary disease. If the child be very young, or be of feeble constitution, or be already weakened by previous disease, we should be careful not to depress; but, on the other hand, we cannot always hope by mere stimulation to tide over the evil day, in the expectation that by such means the patient may be enabled to outlive the disease. Too early stimulation in certain diseases, such as bronchitis and lobar pneumonia, will be found merely to increase the severity of the inflammation, and may by itself be sufficient to determine the fatal issue. In bronchitis, especially, death has, I believe, been often caused in young children by a too early administration of carbonate of ammonia. Medicines—and stimulants do not belong to the least valuable class—are beneficial when selected with judgment, and given at a proper time; but they may be very hurtful when given imprudently and without discrimination. It is, then, of especial importance in dealing with children, upon whom the action of medicines is so powerful, that we should have a distinct idea of the object sought to be obtained by the administration of a drug—that we should have a definite therapeutic purpose in all we do. Therefore, until we find some trustworthy indication for the use of a drug, we should be careful to give nothing of importance, but should content ourselves with ordering some harmless fluid, watching meanwhile for any symptoms which may arise to guide us to the employment of more active measures.

There is one class of remedies which is of singular value in the treatment of the diseases of young children—viz., the alkalies. In all children (in infants especially) there is constant tendency to an acid fermentation of their food. This arises partly from the nature of their diet, into which milk and farinaceous matters enter so largely; partly from the peculiar activity of their mucous glands, which pour out an alkaline secretion in such large quantities. An excess of farinaceous food, therefore, soon begins to ferment, and an acid is generated, which stimulates the mucous membrane to further secretion. In all chronic diseases, and in many of the acute disorders, this sour condition of the stomach and bowels is present. Alkalies are therefore useful—firstly, in neutralizing the acid products of this fermentation; and secondly, in checking the too abundant secretion from the mucous glands. A few grains of soda or potash, given an hour or two after taking food, will quickly remedy this derangement and remove the distressing symptoms which arise from it. In the chronic diseases, indeed, attention to this point is of especial importance; for by placing the stomach and bowels in a healthy state, and insuring a proper digestion of food, we put the child in a fair way of recovery, and prepare the way for the administration of tonic and strengthening medicines, by which his restoration to health is to be brought about.

In prescribing for infants, an aromatic should always be included in the mixture. The aromatics are useful, not only for their flavouring properties, but also for their value in all those cases of abdominal derangement where flatulence, pain, and spasm, resulting from vitiated secretions, and undigested food, are present to increase the discomfort of the patient. Such dyspeptic phenomena are usually relieved rapidly by the use of these agents; and aniseed, cinnamon, carawayseed, or even tincture of capsicum in minute doses, will be found important additions to the prescription in all cases where alkalies are required.

In prescribing for children, the proper dose of a medicine cannot always be calculated according to the age of the child, and does not in all cases bear the same proportion to the quantity suitable for an adult. For certain drugs children show a remarkable tolerance, while to the action of others they show as remarkable a susceptibility. Thus opium, it is well known, acts upon a child more powerfully than would be expected, judging from the mere difference of age. It should therefore be given to infants with a certain caution, especially if the child be enfeebled by disease. It is, however, a medicine which is of especial value in the treatment of the

diseases of infancy, and may be given without fear if care be taken not to repeat the dose too frequently. Belladonna, on the contrary, can be taken by children in large quantities. A child of two or three years old will bear without inconvenience a dose which in an adult might produce very uncomfortable symptoms.* Lobelia, again, is a remedy which is very well borne by children. Dr. Ringer has given it to "very young children" in doses of five minims every hour, and in no case has he noticed any ill effects to follow its administration. Arsenic should be given to children over five years of age in the same dose as that used to adults, and infants of a month or two old will take one drop of Fowler's solution three times a day with great benefit in cases of gastric catarrh. The influence of mercury upon young children deserves remark. It seldom in them produces stomatitis or salivation; but an excess of the drug is not therefore harmless; its influence is seen in the irritation of the alimentary canal which it so often excites, and in the profound anæmia which it induces. The anæmia which is so common a sequence of constitutional syphilis in infants is no doubt often a result of too long-continued mercurial treatment.

When the physician has prescribed the necessary medicines, and given directions as to the diet and general management of the child, his duties are not necessarily ended. It is his part not only to advise, but also, as far as possible, to see that his directions are carried out. The soundest advice is useless if it be not put into practice, and all the art of the physician may be neutralized by weakness or indifference on the part of the attendants. From a feeling of injudicious fondness a mother will sometimes neglect the duties entrusted to her, through a fear of inflicting pain or an unwillingness to subject the child to annoyance. In these cases the medical attendant should impress upon her the importance of the measures to be taken, and should remind her that he is there only as an adviser, while it is her task to put his advice into practice. During an illness a child is too often considered as one whose slightest desire is to be instantly gratified, on the ground that opposition might aggravate the severity of his complaint, even if it did not exercise an unfavourable influence upon the issue. A petted child well knows how to take advantage of this feeling, and the unwise indulgence of those around him is often the most serious obstacle to his recovery. If, however, a child be well enough to form unreasonable wishes, he is not too ill to bear the disappointment of a refusal, and the mother should endeavour with gentle tact to divert her child's thoughts from any hurtful inclination of the moment, remembering that the truest kindness consists in abiding strictly by the directions of the physicians, and in allowing nothing which would in any way interfere with recovery.

"NITRATE of amyle" is the latest scientific remedy for asthma; but a bronchitic contributor says that a night-ride of a mile made him much worse.

A NEW depilatory mixture is recommended by Prof. Boettger, consisting of one part of crystallized sulphhydrate of sodium and three parts of prepared chalk. Mixed with water, and applied to the skin, it effects the easy removal of hair.

A PATENT OYSTER.—Where will the genius of the American inventor end? It is announced that a Maine man is about to apply for a patent for an artificial oyster, made out of flour paste, tapioca, salt and water. The inventor places these in second-hand oyster shells which are carefully glued around the edges; and when a half intoxicated customer calls for a dozen raw on the half shell, he gets them fresh from the shop.

COBRA POISON.—Cobra poison has been recently tested as to its enduring action when taken from the snake and preserved. Somewas kept in small bottles, and then injected under the skin of various animals with fatal effects. It was also chemically analyzed, and gave as the result—carbon, 46; nitrogen, 13; oxygen, 6; sulphur, 25; the rest of hydrogen. This, as M. Dumas remarks, is exactly the composition of beer-yeast, and supports the idea that the cobra poison is of the nature of an animal ferment.—*Medical Press and Circular*.

* It is important to remember this in giving belladonna for its sedative effect, as in pertussis.



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"WITH regard to the Silicated Carbon Filters, I have made many experiments upon them, and have been astonished at the energy and rapidity of their action. I passed through a small Filter of this make some of the worst description of water supplied by the London Water Companies, and found it, after filtration, to have become as pure as the very best London water. My experiments show that the Filter exercises a decomposing action—a chemical action—on the Organic Impurities in Drinking Water. I have no doubt that Water, which is dangerous from the Organic Matter contained in it, becomes safe on passing through the Silicated Carbon Filter. A point of some importance, shown by my experiments, is that a Second Filtration still further improves the quality of Drinking Water. After being in use for a considerable period, Filters lose their power and require renovation. I have found that the passage of a little Hot Water through the Silicated Carbon Filter, and afterwards blowing a little air through it, restores its power."

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A YEAR OF FAMINE.

IT may be information to some of our readers whose literature varies between the *Daily Telegraph* and books on chemistry, that according to the old Jewish law, one year in every seven the cultivation of the earth was altogether suspended. Some may think that we have gone rather out of our way to drag in this little bit of history; but if Mr. Sandford may dig down into four thousand years to find an argument against admitting women into the Pharmaceutical Society, we see no reason why other writers should be denied the benefit of the same source. We have a better excuse, too, than the ex-President of the Pharmaceutical Society. Going back four thousand years, but without pretending to be exact in our dates, for examples to the ladies of this century, we bring up such very doubtful specimens, as Delilah and Jezebel from one history, Helen and Cressida from another. These would hardly suit Mr. Sandford's argument, at least as we understand it. But with us the case is different. We have plodded patiently along down the long age, examining the records of Houses of Parliament, National Assemblies, Oecumenical Councils, Senates and Sanhedrim; but, until we arrived at the instance we mentioned at the top of this paper, have come across no record so barren of results, as the story of the labours of the Pharmaceutical Council just expiring. But the parallel fails in one notable point. The Jews did let the ground alone during that year, and never expected any harvest. The Council, on the other hand, has been digging up the whole field, but as far as the outside world has any chance of knowing, with no product at all. We are disposed to think that it might be an advantage to do without a Council altogether one year out of the seven. Some minds more curiously constituted than ours think that, if we only had one during the seven years, the blessing might be still more marked. Whether, however, the ground is exhausted, or whatever may be the reason, there remains the fact, which as faithful journalists we are bound to record—that while discussions have been abundant, ideas and suggestions more frequent than April showers, results have been absolutely nil. During the year there have been three pro-

minent questions before the Council. These will occur to every one who has been interested in the proceedings. Provincial education, reporting the Council meetings, and the admission of women. The treatment of each of these subjects has been singularly similar, and has in each case been marked by three distinct stages—irresolution, vacillation, abandonment. The first was the question for which, if for anything special, the Council was elected. There was not one of them, we believe, who had not more or less distinctly committed himself to the formula, "something must be done." They appealed to the world for suggestions, and the world gave liberally, as it generally does when advice is all that is asked; and the wealth of idea poured out before them was so abundant that, overwhelmed by the magnitude of the questions involved, they dropped the subject entirely. They started their year of office with the intention of admitting reporters to their deliberations, as other representative bodies do, and every one thought they had decided on the leap. But just as they reached the brink the construction of some sentences in this journal is said to have alarmed them, and they drew back hastily and established the present happy system of recording such specimens of their debates as may seem suited to the outside world. The third question, that of the admission of women as members has roused up plenty of individual vigour; but collectively, the Council has again presented the same sorry spectacle of indecision and procrastination. We cannot blame the Council. Individually there are among them men of remarkably clear views, and, as we should judge, of decided opinions—men quick to discern, and bold to act. But somehow the combination of the brains of the whole twenty-one has produced a collective machine, remarkable only for masterly inactivity, and whose action has been modest to a fault. If one takes either of the questions we have referred to, one in which perhaps he was specially interested, he can only sigh as he calls to mind its rise, meridian, and fall; and as he remembers the unending oscillations of senatorial opinion, mutter in the words of the Psalmist, "They reel to and fro; they are at their wits' end; they stagger like a drunken man."

This dearth of result may not be altogether an unmixed evil. Again we repeat, we make no complaint of the eminent and accomplished gentlemen who form the Council. We are merely pointing out a curious fact which has followed the year's labours. Very likely it is a blessing in disguise. Blessed are the people that have no history, we are told; and perhaps our great anxiety should be to secure this colourless result permanently. That it is likely enough to come about in the next Council is evident, when we notice the list of those willing to serve next year. There seems every probability that we shall have a Council almost identical with that just expiring. We shall welcome the outgoing members back heartily; but for all that we cannot refrain from asking how it is that so many gentlemen of high attainments and reputation, having been nominated, should publish their assurance that they shall decline to serve if elected? The fact is surely to be regretted, because a judicious infusion of new blood each year is calculated to enliven and enrich the proceedings of our Parliament.

MR. A. D. BREAZELE, of Alabama, has patented a mosquito-frightener composed of the following formidable ingredients: Oils of pennyroyal, savin, origanum, terebinthe and sassafras, tinctures of lavender, chloroform and arnica; gum camphor, nitre, alcohol and kerosene oil. If the Alabama mosquitoes can stand such a preparation as the above, they are proof against anything, and the only remaining thing to be done is to set mouse-traps to catch them.—*Scientific American*.

LIMITED LIABILITY.

THE art of getting a living is, or rather ought to be, a very simple process indeed. There can be no doubt at all that, if every man from his youth upwards took to straightforward, honest labour, whether of hand or of brain, and turned not aside, in the hope of more quickly reaching his goal, to shorter cuts and often to crooked ways, we should soon abolish pauperism, and a great deal of crime too. The world is still big enough to support ten times as many lives as those which now exist upon it; but men will crowd together into cities, men will gamble, will prefer to live rather by their wits than by their true skill patiently and laboriously cultivated. This "huddling" tendency of human nature is very curious. We all know how the poorer classes of London, for instance, love to crowd together in narrow foetid courts, and only the force of the law can induce them to change their wretched, comfortless, and expensive homes for brighter and more airy little cottages in the suburbs. The gambling tendency, however, is still more inherent in human nature, and one brilliant success in that line has more influence on the masses than a thousand miserable failures. Every man, too, who has any intellect whatever indulges at odd moments in dreamy visions and concocts schemes more or less crazy, which, for the moment, he is mad to carry through. Most men can control their fancies by their reason; but a fair share of them are fanatical enough or reckless enough to plunge wildly into the fascinating lottery, and therefrom result so much of the poverty and so much of the wickedness of the world. No government can altogether prevent this gambling spirit. Such a government as ours is especially weak in that respect, for the very reason of its freedom. All it can do is to provide channels and surveillance. Of all the arrangements provided by the Government in this regard the provision of limited liability companies has been perhaps the most grandly successful as an outlet for the passion to get rich. "Some people," said one of the heroes of this generation, "some people has brains and no money, and some people has money, but no brains;" and the system of establishing a limited liability company has proved a magnificent means of bringing these classes into communication. We are not by any means desirous of decrying the principle of limited liability. We fully appreciate its many advantages, and believe that, on the whole, it has worked well. But we shall do no harm by pointing out one or two of its eccentricities, not to say abuses.

Any seven persons or more may unite to form a limited liability company. They may give their association any title they please, provided only that they add the word "Limited" at the end, and as far as we can see they may adopt any figure they please as their nominal capital. It is true they are compelled to draw up a memorandum of association and deposit it at the Registrar's office at Sergeant's Inn, where anyone may inspect it by paying a shilling. This gives the amount of money actually subscribed, the names and objects of the association, and other particulars. But suppose one receives a ten-pound order from the Universal and Eternal Finance Company, Limited, capital £100,000, who thinks of going to Sergeant's Inn to inquire into the assets of that association? And yet it is just possible, if the shares are fixed at £1 each, the company may be worth £7 sterling. Baron Rothschild and Mr. Baring might be among the shareholders, but no more than £7 could be wrung out of that company. Of course this is a *reductio ad absurdum*; but that it is sometimes approached, take the case of the Liverpool Civil Service and Public Supply Association, Limited, capital £50,000. This association registered itself with a capital of

£35, and went and bought, or at any rate rented, Compton-house, one of the largest business establishments in Europe. Other shareholders have no doubt joined the enterprise since it was registered, but that is an accident, and does not affect the argument. Some of these projects, it is true, turn out successful, and then everyone praises them. But what we wish especially to point out is, that a failure leaves no shadow of stigma behind. Indeed, if anything, the shareholders are pitied rather than blamed, and looked upon with certainly as much tenderness as are the creditors. We have no remedy to suggest, but we do think that the principle of limited liability should be most jealously guarded, and that something ought to be done to keep the nominal in some sort of actual ratio to the actual capital.

The Memorandum of Association of the Universal Drug Supply Company is simply and solely amusing, because the Pharmaceutical Society holds the power of stopping their proceedings at any desirable moment. Apart from his extraordinary error in selecting "the business of apothecaries, pharmacists, chemists and druggists" as the object of the company, one cannot help remarking with regard to Dr. Pennefather, who is evidently the coachman of this enterprise, how skilfully he has built his nest. He is to be managing director, and is to be paid $2\frac{1}{2}$ per cent. on the gross returns. He is not to be dismissed from that office for two years after commencing business, and after that period can only be ejected from his position by a vote of three-fourths of the directors, and with a compensation of three years' salary, reckoning by the results of the year immediately preceding. A special exception is made in the event of his acting expressly to the injury of the company. On the other hand he is at liberty to leave the service of the company by giving three months' notice. We wish the ingenious gentleman success in the next project in which he shall enter. This road is barred.

We have no wish to follow Mr. Ruskin back into primitive savagery, to escape from modern artificiality. But we want to see a more patient devotion to work on the part of Englishmen, a less frequent indulgence in schemes, a conviction that constant and cheerful labour is not merely the means to an end, the pathway to the Beulah of idleness, but that it is the necessary and happiest course of man in this life.

THE SCHOOL OF PHARMACY.

INDICATIONS are not wanting that the article in our February number, entitled "Behind the Scenes; or, Student Life at Bloomsbury Square," has effected no small amount of good. At any rate it has stirred up both the governing body and the executive; and, though no illuminated testimonial in recognition of our efforts has reached us yet, there have come murmurs of applause, and half-distinct rumours of vigorous, honest efforts to rectify what defects may have been fairly shown to exist in the institution. At the last meeting of the Council another new balance was provided for the laboratory, and we hope that before long some much more extensive expenditure, especially for reading-students, will be ventured on in connection with the School of Pharmacy. It is certainly somewhat anomalous that the Society should have worried itself all this long time about its surplus income, and how to spend it to the best advantage educationally, and should only now have discovered the possibility of improving some of its own educational arrangements.

It is generally a good thing to go into waters after an angel has "troubled" them, and we fully believe that in ruffling the

self-complacency with which the Bloomsbury-square countenance had become overspread, our correspondent has done excellent service. His communication has turned more attention to the subject than appears on the surface, and future students will benefit by his censoriousness.

Having said this much, however, we think it only fair to guard against any false impression which that article might create. We repeat now what we stated in February, that we by no means endorse all its statements. We do not believe that students themselves are quite the best judges of the means of instruction provided for them. It is only fair to say, too, in reference to the title of the paper, that there are no scenes behind which the operations of the school are hidden. All its proceedings are perfectly free and open; and as we all know, its students are now, and continue to come forth as, the most honourable and hard-working of pharmacists. It is only fair to confess, too, that from its foundation this institution, in teaching chemistry, has carefully and ably kept in view the relations of that science with pharmacy. Once more, it is only fair to say that, while in most of the official laboratories both in London and on the Continent the attendance of the professor is but an occasional visit, and his superintendence little more than nominal, there is in this one a constant supervision, and its director and demonstrators are regularly at their posts. That their system of teaching is sound is, as we have already said, abundantly proved by its results. Many students doubtless would prefer to be wound up more quickly, but there is much to be said against that high-pressure process. Such a system strengthens the candidate for examination, but may permanently weaken his powers of thought and reason, and in that case does not tend to cultivate a race of high-class pharmacists.

THE PHARMACEUTICAL COUNCIL.

FORTY-TWO Members of the Society have been nominated for election on the Council in May next, and the following nineteen have declared their willingness to accept office, if elected:—

ATHERTON, JOHN HENRY, Long-row, Nottingham.
BALDOCK, JOHN HENRY, 3, High-street, South Norwood, Surrey.
BAYNES, JAMES, 24, Waterworks-street, Hull.
BETTY, SAMUEL CHAPMAN, 6, Park-street, Camden-town, N.W.
BOTTLE, ALEXANDER, 37, Townwall-street, Dover.
BROWN, WILLIAM SCOTT, 113, Market-street, Manchester.
GREENISH, THOMAS, 20, New-street, Dorset-square, N.W.
GUYER, JAMES BRETT, 11, Strand, Torquay.
HAMPSON, ROBERT, 205, St. John-street-road, E.C.
HILLS, THOMAS HYDE, 338, Oxford-street, W.
MACKAY, JOHN, 119, George-street, Edinburgh.
PALMER, ROBERT, 35, Ovington-square, S.W.
RADLEY, WILLIAM VALENTINE, 74, Market-place, Sheffield.
ROBBINS, JOHN, 372, Oxford-street, W.
SANDFORD, GEORGE WEBB, 47, Piccadilly, W.
SAVAGE, WILLIAM DAWSON, 30, Upper Bedford-street, Brighton.
TURNER, CHARLES ERNEST, 63, Great Russell-street, W.C.
WILLIAMS, JOHN, 16, Cross-street, Hatton-garden, E.C.
WRIGHT, GEORGE HENRY, 103, Borough High-street, S.E.
The following twenty-three members decline to accept office, if elected:—
ANDREWS, FREDERICK, 23, Leinster-terrace, W.
BURDEN, EDWARD, 38, Duke-street, Grosvenor-square, W.
BOSTOCK, WILLIAM, 241, Stamford-street, Ashton-under-Lyne.
CARR, JOHN, 171, High Holborn, W.C.
CHURCHILL, JOHN, New-street, Birmingham.
DARBY, STEPHEN, 140, Leadenhall-street, E.C.
DEANE, HENRY, 17, Pavement, Clapham.
DYMOND, GEORGE, Birmingham.
GROVES, THOMAS B., 80, St. Mary-street, Weymouth.

HASELDEN, ADOLPHUS FREDERICK, 18, Conduit-street, Bond-street, W.

HANBURY, CORNELIUS, Plough-court, Lombard-street, E.C.

HANBURY, DANIEL, Clapham-common, S.W.

HODGKINSON, WILLIAM, 127, Aldersgate-street, E.C.

HUSKISSON, HENRY OWEN, 322, Gray's Inn-road, W.C.

HOWDEN, ROBERT, 78, Gracechurch-street, E.C.

MORSON, THOMAS N. R., 38, Queen-square, Bloomsbury.

RANDALL, WILLIAM B., 143, High-street, Southampton.

REYNOLDS, RICHARD, 13, Briggate, Leeds.

SAVORY, C. IL., 143, New Bond-street, W.

SMITH, EDWARD, 8, Strand, Torquay.

STACY, SAMUEL, 300, High Holborn, W.C.

VIZER, EDWARD B., 63, Lupus-Street, S.W.

WHITFIELD, HENRY, 45, High-street, Worcester.

AUDITORS.

Mr. Frederick Andrews, of Leinster-terrace, Hyde-park, W., had been nominated for election as an Auditor for the ensuing year, and the Council nominated the following gentlemen in order to complete the list of five:—

Frederick Barron, Bush-lane, Cannon-street, E.C.

William Hodgkinson, 127, Aldersgate-street, E.C.

Edward Horner, 20, Bucklersbury, E.C.

William Squire, 5, Coleman-street, E.C.

THE REPRINT OF THE PHARMACOPŒIA.

IN the General Medical Council, on Monday, March 31, the following report from the Pharmacopœian Committee was presented:—

REPORT OF THE PHARMACOPŒIA COMMITTEE.

"The Committee beg to report that of the 25,000 copies of the Pharmacopœia which have been printed, 1,600 only now remain in stock. The sale of the Pharmacopœia has increased, and is increasing, as is shown by the fact that, whilst in 1871 it amounted to 1,014 copies, in 1872 it amounted to 1,144; whilst in the first three months of the present year 650 copies have been sold. Under these circumstances, it is evident that before many months it will be necessary to issue either a new edition or a reprint of the present edition.

"The Committee are of opinion that a proposal to issue a new edition of the Pharmacopœia should not be entertained at present. The work having been in circulation now between five and six years, is fully established in use, and the Committee are of opinion that any attempt to replace it by another would be received with disfavour, as an unnecessary disturbance of existing arrangements.

"The Committee therefore recommend that a reprint of the present edition be issued in sufficient time to meet the necessary requirements, and that the Executive Committee be authorized to make arrangements at a proper time for such reprints.

"The Committee are further of opinion that as several new medicines and new forms of medicines have become established or been introduced to the favourable notice of the Profession, it would be desirable to introduce these articles in the form of an appendix. Such addenda might be prepared at once, and issued in a separate form, for the use of those who possess the Pharmacopœia, and it may hereafter be bound up with the next reprint.

"The Committee believe that such addenda would occupy about a sheet of matter, corresponding to that of the Pharmacopœia, and they recommend that such addenda be prepared and issued when ready.

"The services of Dr. Redwood will be made available for preparing the work, under the direction of the Committee, of which proofs will be circulated, when ready, amongst the members of the Council for suggestions and revision; after which, on completion by the Committee, the Executive Committee should be authorized to take steps for the publication of the same.

"The Committee have in hand a balance of the sum placed at their disposal in 1869, amounting to £45 2s. 6d. They recommend that the Committee be re-appointed, and that a further sum of £50 be placed at their disposal.

"March 27, 1873."

"R. CHRISTISON, Chairman.

A short discussion ensued, a report of which we extract from the *Medical Times and Gazette*:—

Sir R. CHRISTISON said he agreed with the other members of the Council that the time had now arrived when a small supplementary Pharmacopœia ought to be prepared; and it was proposed that when it was in proof every member of the Council should have a copy forwarded to him. The Council would thus be enabled to obtain their opinions, and the matter would then be placed in the hands of the Executive Committee.

The report was read, and entered on the minutes.

Sir DOMINIC CORRIGAN had one observation to make, which was that, as a prescribing man, he had great difficulty in determining what many of the phrases used in the Pharmacopœia meant—for instance, "sparingly soluble" and "very soluble." He thought it would be very advisable to attach to the various salts, such as iodide of potassium, and so on, the degree of their solubility; and he should like to hear Sir R. Christison's view of the utility of such a description.

Sir R. CHRISTISON said that after careful consideration the Committee of the Pharmacopœia had come to the conclusion that they ought not to put in the degree of solubility of the various salts. Before undertaking to produce a correct statement in that respect he was afraid the matter would require considerable investigation, because chemists were by no means at one upon the subject; and he for one would decidedly be opposed to anything of the kind without a thorough investigation of the whole matter. The Committee had confined themselves to the introduction of new substances, and avoided all interference with the old Pharmacopœia.

Dr. AQUILA SMITH was of opinion that it would be very desirable that what had been suggested by Sir Dominic Corrigan should be done; and, indeed, he could not see that there would be any great difficulty in describing degrees of solubility, for there had been a very large octavo volume published on the subject.

After a few remarks from Dr. APJOHN,

The PRESIDENT said the subject was one upon which he would not venture to make any remark in the presence of so many gentlemen who knew much more about it than himself; but he should like to draw the attention, not only of the Council, but of the Committee themselves, to what was the effect of the report. It seemed to him that it bound the Committee to reprint the existing Pharmacopœia without any correction, however trivial. His opinion and advice would be to leave the matter in the hands of the Committee to make any small alterations which they thought desirable without at all injuring the character of the work, at the same time adding the appendix as proposed. Of course it was never suggested that the book should be reproduced *verbatim et literatim*, for, although an excellent one, it would be superhuman if it required no alteration.

Dr. AQUILA SMITH concurred in the view of the President as to leaving it in the hands of the Committee to make such corrections as they should think proper.

Sir R. CHRISTISON believed it would be injudicious to introduce the proposed improvement, as they would have the effect of creating two standards of reference.

The PRESIDENT said that it was now proposed that the Executive Committee should be authorized to make arrangements at a proper time for such reprints, "and that such corrections should be made as were necessary."

The report so amended was then adopted, and the Council adjourned.

THE prizes given at the end of the winter session of the Leeds School of Medicine, were distributed on the 29th ult. The Hardwick Prize in clinical medicine, value £10, the prize of £10 for clinical surgery, and the medal for medicine, were awarded to Mr. A. W. M. Robson.

A DRUG clerk in Washington is said to have won the heart of a fair young widow, who was temporarily residing there, and who, among her other attractions, owned 2,000,000 dols. The *Boston Traveller* says they have gone out West, and opened a magnificent wholesale drug store at San Francisco.

THE kingdom of Bavaria, has abandoned its old Pharmacopœia, and adopted the new German one. This involves also a change in the system of weights and measures.

Literary Notes.

THE "PHARMACEUTICAL JOURNAL," APRIL 12, 1873.

SOME few months ago an editorial note in the *Pharmaceutical Journal* seemed to indicate that the conductors of that publication not only claimed the omniscience, which is the universal and necessary attribute of editors, but also assumed an immaculate purity with regard to its literary management which, it was delicately hinted, was in favourable contrast with the practice of some other journals. Certain journals, it was intimated, were in the habit of culling some of the flowers which adorn the pages of our contemporary and garnishing their own therewith without any acknowledgment. That this apparent similarity in articles may sometimes occur when there can be no suspicion of transference of property, is evidenced by the following curious instance. Of the following reprints, the first is part of a short article in *Nature* of April 3rd, respecting the voyage of the *Challenger*; while the second is the whole of a leading article in the *Pharmaceutical Journal*, on the same subject:—

"NATURE," APRIL 3.

"One of the lions of the cruise is a new species of lobster perfectly transparent. Not content with obtaining animals with eyes so fully developed that the body may said to be an appendage, a new crustacean has now dredged up, in which the body has cut itself clear of the eyes altogether, and the animal is totally blind. It has no eyes, or even the trace of an eye. To make up for its deficiency nature has supplied it with the most beautifully developed, delicate lady-like claws, if one may use the term, it is possible to conceive. Nearer the West Indies, in a depth of only half a mile, some similar creatures were brought up, and here the claws, longer than the body, are armed throughout with a multitude of spike-like teeth, looking more like a crocodile's jaw than anything else. At a short distance from Tenerife, in a depth of a mile and a half, a rich and extremely interesting haul of sponges and coral was obtained, but the latter was unfortunately dead. It is a white species, as large and heavy as the pink coral of the Mediterranean."

The extreme scientific interest of the facts narrated in these articles, is quite a sufficient justification for our printing them in duplicate.

We are almost too modest to call attention to another curiosity in the same issue of our hebdomadal friend, but a sense of duty will carry us through. This occurs in the department headed "Reviews," where a "Half-yearly Abstract of the Medical Sciences" by William Domett Stone, M.D., is commented on. The review is quaint throughout. For example, its opening sentence must be admitted to be startling:—

"Progress in legal or theological science," says the writer, "is as slow as that of a glacier;—in medicine it is as rapid as the stream to which the glacier gives birth."

The critic had evidently got his metaphor ready, and took the earliest opportunity of using it, regardless of its appositeness. Soon after we are told that this book of Dr. Stone's is neither well done, nor imperfect. But the point we especially wish to arrive at is, that in selecting one or two errors from the work, an injustice is (no doubt unconsciously) done to us. We read:—

"In the mode of distinguishing creosote from carbolic acid the 'Canada Medical Journal' is quoted as the first source of the innovation, whereas it was primarily suggested in our own columns."

We presume this refers to the test published by Mr. Morson, which appeared in the *Pharmaceutical Journal* of May 18th, 1872, and in the *CHEMIST AND DRUGGIST* of May 15th, 1872.

This sort of criticism is weary work, or we would have made some serious comments on the following paragraph in the journal under review. It professes to be an answer to a correspondent:—

"J. W.—The medal you refer to is a thing not at all countenanced by the Pharmaceutical Society, and we should expect those making use of the fact of possessing it would be classed among quacks and other exhibitors of spurious credentials."

If this refer, as we presume it does, to the medals which

"PHARMACEUTICAL JOURNAL," APRIL 12.

"One of the lions of the cruise is a new species of lobster, perfectly transparent. Besides obtaining animals with eyes so fully developed that the body may be said to be an appendage to the eyes rather than the eyes to the body, the 'Challenger' has dredged up a new crustacean in which the body has cut itself clear of the eyes altogether; the animal being totally blind, and not even having the trace of an eye. To make up this deficiency it is supplied with the most delicate beautifully developed claws it is possible to conceive. Near the West Indies, in a depth of only half a mile, some similar creatures were brought up, having claws longer than the body armed throughout with a multitude of spike-like teeth. At a short distance from Tenerife, in a depth of a mile and a half, a rich and extremely interesting haul of sponges and coral was obtained, but the latter was unfortunately dead. It is a white species, as large and heavy as the pink coral of the Mediterranean."

Dr. Muter lately distributed to his pupils who passed the pharmaceutical examinations in "honours," we can only say that, setting aside all consideration of its bad taste and worse temper, it is a passage which, for legal reasons, we should have declined to publish on our own authority, even at the rate of a pound per word.

Our friends and agents, Messrs. W. A. Weed and Co., of Chicago, have sent us their annual prices current of druggists' sundries, issued by them as a handsome volume, under the title of "The Year Book of Pharmacy and Information." It contains a very useful collection of items and facts of value to chemists and druggists, and is highly creditable to the enterprise of the firm.

A correspondent has favoured us with a copy of "Notes on Chemistry," which is sold by a certain Hill's Prizeman to students preparing for the Minor Examination, for the consideration of 1s. The volume contains about as much matter as would occupy a column of this journal, and is simply an explanation of "quantivalence." As the pamphlet was bought through an advertisement in this journal, we think it right to notice the subject.

Pharmacy.

ADULTERATION OF RHUBARB AND YELLOW MUSTARD.

WHEN rhubarb or mustard is adulterated with turmeric root, the adulteration is easily detected by shaking it for one or two minutes with absolute alcohol, filtering, and then adding, first a concentrated solution of borax, and then some hydrochloric acid. If the solution turns brown on adding the borax and retains its brown colour on the addition of the acid, it indicates the presence of turmeric. This is a simple case of reversing the usual turmeric test for borax, and making the borax the reagent which detects the turmeric. It seems strange enough that until recently this had not been thought of.—*Scientific American*.

CASTOR OIL EMULSION.

R.—Ol. ricini, syr. fruct. aurant., āā ʒj.; vitellus ovi., No. 1; aq. flor. aurant., ʒss. M. ft. emulsio. This is said to make a very pleasant emulsion, readily taken by adults as well as children.

SYRUP OF LACTO-PHOSPHATE OF LIME.

Take of Chloride of Calcium ʒj.
Phosphate of Soda ʒiv.
Concentrated Lactic Acid . . ʒj.

Dissolve the chloride of calcium and phosphate of soda separately, and mix the solutions; wash the precipitate and dissolve in the acid. Filter and mix with sufficient syrup to make two and one-half pints.—E. CHILES, in *American Journal of Pharmacy*.

DETECTION OF NITRATE OF POTASH MIXED WITH NITRATE OF SILVER.

M. Pollacci (*Bollettino Farmaceutico*) states that an adulteration of nitrate of silver with nitrate of potash may be detected by heating about a gram of the suspected nitrate to redness in a porcelain crucible, allowing it to cool and adding to the residue a few drops of distilled water. If the liquor be alkaline to test-paper, it is proof that the specimen contained nitrate of potash. The test is based upon the reaction by which nitrate of potash is converted into the oxide when heated in presence of metallic silver (arising from the reduced nitrate), and afterwards into the hydrate by combination with water.—*Pharmaceutical Journal*.

TINCTURE OF QUININE.

Mr. J. H. Baldock, Mr. Hustwick, and previously Mr. T. B. Groves (*Pharmaceutical Journal*) have shown that the crystalline deposit so frequently met with in tincture of quinine is not, as is often supposed, undissolved quinine, but sulphate of lime. Its presence is accounted for by assuming a double decomposition between the sulphate of quinine and the salts of lime (the citrate, malate, etc.) more or less present in the white portion of the orange peel. Of course, as Mr. Baldock points out, the production of these crystals is accelerated and not prevented by the not unfrequent addition of dilute sulphuric acid to the tincture.

EUCALYPTUS GLOBULUS.

It is stated that in the Mauritius, where fever of a malarious character is very prevalent, the employment of quinine has been in some measure discontinued in favour of the eucalyptus globulus, which is considered by many who have watched its administration to have proved of real service, and a good substitute for the former very expensive alkaloid. The Mauritius offers, unhappily, a large field for testing the properties of this drug, and we shall await the results of further experience in that island with interest. At present there is only one tree in existence in the Royal Botanical Gardens, but the soil and climate of the Mauritius are very favourable to the growth of the eucalyptus, and a large number of seedlings are thriving. The leaves are sold at sixpence an ounce, and an infusion of these is the popular method of administering the drug.

MUSTARD FLOUR.

In manufacturing mustard flour, Mr. Greenish explained in a paper which he read before the Pharmaceutical Society on April 2:—The black and white mustard seeds are crushed separately, and then mixed in definite proportions. The object is this. The quantity of myrosin in the black mustard seed is not sufficient for the decomposition of all the myronate of potassium present, and as the white mustard seed contains a large quantity of myrosin and no myronate of potassium, it is added with advantage and economy. If water be added to pure flour of black mustard-seed, the essential oil allowed to form and then removed, a further addition of flour of white mustard seed will again give rise to more essential oil, and thus prove that all the myronate has not been decomposed by the quantity of myrosin naturally present in the black seed; and that probably by decomposing this excess of myronate of potassium, the bitter taste in the black mustard can be entirely removed, making it more agreeable for table use. He thinks it would be an advantage if some certain proportions of the two seeds were given in our *Materia Medica*, so as to define absolutely what is to be understood as the official mustard.

MERCURIAL OINTMENT.

In the *Journal de Pharmacie et de Chimie* there is an article by M. Magnes Lahen, respecting the extinction of mercury by fatty bodies. The conclusion arrived at is that the extinction of the mercury is due to its minute subdivision, so minute that it becomes encased with fatty coatings, which do not readily break. He finds that liquid fatty bodies produce this result more rapidly than solid ones; and he gives the following formula for mercurial ointment and benzoated mercurial ointment, whereby he says they can be made with a great economy of time, and with excellent results.

Mercurial Ointment.

Mercury	1,000	grams
Oil of sweet almonds	20	"
Lard	980	"

The mercury should be well mixed with the oil in a wide shallow vessel, using a broad wooden pestle. In about twelve or fifteen minutes the mercury is reduced to a kind of homogeneous paste, in which scarcely any globules are perceptible. This is to be mixed with not more than 200 grams of melted lard, until the mercury has completely disappeared. This will occupy less than an hour, and then the ointment may be incorporated with the rest of the lard by rubbing.

Benzoated Mercurial Ointment.

Mercury	1,000	grams
Oil of sweet almonds	20	"
Balsam of Peru	20	"
Lard	960	"

The oil of sweet almonds and balsam of Peru are to be mixed, and then rubbed with the mercury. Afterwards the process is similar to that described above. The benzoated ointment is said to be prepared more quickly, and with better results than the other.

AMMONIACUM.

An inquiry of some interest has been started by Mr. D. Hanbury into the original source of ammoniacum. Dioscorides, in the first century, describes it as coming from "the parts about Cyrone," and near the temple of Ammon, from which it may have derived its name. Some ammoniacum still reaches this country at times from Morocco, and is probably of the same botanical origin as that first described by Dioscorides and others. This gum, however, is very inferior to, and indeed differs from the ordinary Persian ammoniacum, so much so, that certain writers, Pereira, Guibourt, and others, have concluded that the ammoniacum referred to in early times was not the same as we know, or that it had been erroneously attributed to Africa. Mr. Hanbury, however, has discovered that a better quality, more nearly corresponding to the usual ammoniacum, is obtained in Morocco, and that it is both consumed in the Empire and finds its way to Egypt and Arabia. This traffic he believes to have been very ancient, and as London brokers now call the Moroccan product "ammoniacum," there does not seem to be any matter for astonishment that the ancient writers should have confused the two gums. In Jackson's account of the Empire of Morocco he describes a sort of ammoniacum produced by a giant fennel called *Feshook*. The gum exudes from the stem in consequence of the puncture of a beetle, and, falling to the ground, becomes contaminated with earth, for which reason it does not suit the London market; but it is used in all parts of the country for cataplasms and fumigations. Following up Mr. Hanbury's inquiries, Mr. John Moss has made a chemical examination of the African ammoniacum, and shows the results in the following table, which, for comparison, he places side by side with an analysis of Persian ammoniacum by Hagen:—

African Ammoniacum. (Moss.)		Persian Ammoniacum. (Hagen.)	
Resin	67.76	Resin	68.6
Gum	9.014	Gum	19.3
Water and Volatile Oil	4.29	Gluten	5.4
Bassorin and inso- luble matter . . .	18.85	Extractive	1.6
		Sand	2.3
		Volatile Oil and Water	2.8
	99.914		100.0

NEW BASIS FOR SUPPOSITORIES.

Mr. Martindale has found the oil of theobroma to possess certain disadvantages as a basis for suppositories and pessaries. It solidifies very slowly, especially in the summer, it is somewhat difficult to remove from the mould, and being a fatty substance, it impedes the absorption of the medicament the suppositories are impregnated with. He also objects to soap, as suggested by Dr. Redwood, on the ground that it is difficult to form suppositories containing it into proper shape, and also because soap often contains some free alkali, and always some chloride of sodium. He has found that by using oleic and stearic acids in equal proportions, he gets a basis with the following properties:—

1. This mixture has a very low fusing point, and readily melts at the temperature of the body.
2. The suppositories leave the mould without any difficulty.
3. This basis has the advantage besides of being a solvent of such alkaloids as pure morphia and atropia, and of being itself readily absorbed by the epidermis and mucous membrane, at least so far as the oleic acid is concerned.
4. On account of the partial crystallization of some of the stearic acid, the suppositories are firm and can be placed in their position without difficulty, not being elastic, brittle, or yielding in any way.
5. The proportions of stearic and oleic acids can be varied to suit the temperature of summer or winter, and also the other ingredients prescribed with them.

At the Hospital for Women in Soho-square, the pessaries used are made by Messrs. Duncan, Flockhart, and Co., Edinburgh. The basis, according to the hospital pharmacopœia, is one part of gelatine to four parts of glycerine, the gelatine being soaked in water first for a short time, to render it

readily soluble in the glycerine on the application of heat. They are made of the ordinary size of suppositories. I am informed by Dr. Squarey that both he and Dr. Meadows have observed them discharged in their original shape undissolved in the morning, when they have been administered as pessaries the night before. The gelatine and glycerine basis is therefore not a good one for a pessary even, besides having the disadvantage of being elastic, and not possessing firmness sufficient for use as a suppository.

CHEMICAL SOCIETY.

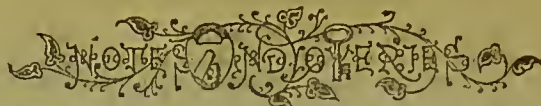
PROCEEDINGS of the Chemical Society, Thursday, March 20, 1873. Dr. FRANKLAND, F.R.S., President, in the chair. The names of the visitors having been announced, and the minutes of the previous meeting read and confirmed, the President called on Mr. C. W. Siemens, F.R.S., etc., to deliver his lecture on "Iron and Steel." The lecturer, after adverting to his former discourse delivered before the Society in 1868, and describing the various experiments he had made to obtain malleable iron direct from the ore, gave an account of the process by which he had succeeded in completely attaining that object. It consists essentially in fusing the ore by means of the most intense heat in a revolving furnace, and then adding the requisite amount of carbonaceous matter to reduce the iron to the metallic state. The malleable iron thus precipitated in the molten mass becomes aggregated into balls by the revolution of the furnace, and can then be easily removed. It is free from sulphur, phosphorus, and other impurities, and dissolves readily in a bath of molten cast iron, producing steel of a quality equal to that made from the best Swedish bar iron. After an animated discussion, the Society adjourned until the anniversary meeting, on Monday, the 31st March.

Thursday, 3rd April, 1873.

Dr. ODLING, F.R.S., &c., President, in the chair.

After formal business of the Society was transacted, a paper on "A Method of determining with great exactness the Specific Gravity of Liquids," was read by the author, Dr. Sprengel. The instrument, consisting of a U-shaped glass tube, terminating in capillary tubes bent at right angles, is very delicate when proper precautions are taken. The second paper, entitled "Researches on the Action of the Copper-Zinc Couple on Organic Bodies: No. II., on the Iodides of Methyl and Amyl," by J. H. Gladstone, F.R.S., and A. Tribe, is a continuation of the authors' researches on this subject; an account of which they communicated to the Society some short time ago. Dr. C. R. A. Wright then read a memoir on "Cymene from various sources," in which he gives the results of his examination of cymene prepared from eight different sources, showing them to be identical. The last paper was by Dr. H. E. Armstrong, being No. XI. of "Communications from the Laboratory of the London Institution," "Action of the Acid Chlorides on Nitrates and Nitrites: Part I. Acetic Chloride." The meeting finally adjourned until Thursday, 17th April, when a lecture "On the Heat produced by Chemical Action," will be delivered by Dr. Debus, F.R.S.

SOLUTION OF SHELLAC IN WATER.—The shellac is broken up, covered with a concentrated solution of carbonate of ammonia, and boiled, preferably on a water-bath, till the ammoniacal smell has disappeared. Fresh solution is added, and the boiling continued till the shellac forms a coherent, somewhat sponge-like mass. After all the carbonate of ammonia is expelled by boiling, this mass is readily dissolved by pouring hot water over it. A kind of wax or soap will generally be found floating on the surface after cooling, from which the solution may be separated by straining. This solution, brought on paper, cloth, etc., dries rapidly, and leaves a thin, coherent, lustrous, and firmly-adhering film of shellac. Such a solution, of course, cannot harm the fibre; but as it is generally coloured, even when bleached shellac is used, it will probably not be applicable to light colours.—*Manufacturers' Review.*



We cannot undertake to send answers through the post to queries which properly fall into this department. But we will do our best to supply useful information on any subject in our scope by this medium.

X. Y. Z.—Your question is an impossible one to answer without knowing far more of the circumstances than you tell us. "The rule" in buying up a share of a business is, that the buyer gets it as cheap as possible, while the seller gets as much as he can. We should say that a sleeping partner, providing half the capital for a business, is entitled to from 15 to 30 per cent. of the increase in value which the business has made, the proportion varying according to the risk involved.

G. S.—For perfuming cards, programmes, &c., you should prepare a powder of about equal parts of carbonate of magnesia and freshly ground orris-root, with a trace of myrrh. Add a few drops of otto of roses and ess. bouquet, and mix thoroughly in a mortar. Put the cards, etc., into a small box, and dust the powder over them. Let them remain for a day or two, then take them out and brush off the powder.

Co₂.—You will find the "Manuel du Fabricant de Boissons Gazeuses," published by Hermann Labapelle, Paris, 4, a good work on the manufacture of mineral waters—though, of course, it is in French. Most of the English manufacturers of machines, we believe, also supply books of instruction.

Jacobus.—Chloric ether, which spirit of chloroform has replaced, was a most unsatisfactory preparation, its strength being extremely variable. Generally it consisted of one volume of chloroform dissolved in six or eight of rectified spirit.

Triticum.—A qualitative and quantitative analysis of flour is a work of considerable difficulty, and could only be carried on by an experienced analyst. If you wish to make the experiment for yourself, we should recommend you to consult Fresenius' Analysis.

W. G. P.—The first examination of the Apothecaries' Society is held monthly at Apothecaries' Hall, the subjects being Chemistry, Botany, Pharmacy, and Prescriptions, and the fee, £2 2s. It is not accepted in lieu of the Preliminary Examination by the Pharmaceutical Society, which you would have to pass before proceeding to the Minor. You would obtain full information by applying to the secretaries of the respective societies.

Anthelmintic.—Ching's worm lozenges are, we believe, a compound of calomel, resin of jalap, and sugar.

A. J. P.—The compound which most closely resembles true Seidlitz-water is a mixture of efflorescent sulphate of magnesia, bicarbonate of soda, and bisulphite of soda, dissolved in water.

F. L. S.—Guarana bread is prepared by pounding the dried seeds of the *Pantlina sorbilis*, previously deprived of their aril, kneading into a paste, and cutting into flat cakes. It is used in the same way as chocolate or cocoa.

Aquarium.—The air necessary to support the respiration of fishes is held in solution by the water of the sea, river, &c. It is richer in oxygen than atmospheric air, 100 vols. of it containing 33 vols. of oxygen. This difference is owing to the fact that oxygen is about twice as soluble in water as nitrogen. The carbonic acid, exhaled by the fishes, is retained by the marine plants, which, in their turn, evolve oxygen, thus helping to keep the composition of air in the water constant.

Anæsthetic.—You will find a very interesting account of the sensations experienced by a patient under the influence of nitrous-oxide in the CHEMIST AND DRUGGIST for March.

F. B.—The drink known as "koumiss" is made by fermenting asses, milk, and heating up with a whisk.

Anatomist.—The following preparation, recommended by Mr. Goadby, will preserve anatomical specimens and animal substances generally.

R Bay salt, 5iv.
Alum, 3ij.
Perchloride of mercury, gr. ij or gr. iv.
Water, Oi. to Oij.

The weaker proportions should always be employed at first. The specimens to be covered with the fluid, which should be changed frequently.

W. A. S.—Gurd soap is a very different thing to Sapo Durus, B. P., and should never be substituted for it. The former is a compound of mutton fat, olive oil, and soda, whilst the official soap is simply a combination of soda and olive oil, and is represented by the white Castile soap of commerce.

B. P.—Only Italian oil should be used in preparing Emplast. Plum Gallipoli and Spanish oils will not make an adhesive plaster.

Pharmacist.—Ge. 3d. is the special subscription for the CHEMIST AND DRUGGIST, from March to December inclusive, post free

Medicus.—The respirator designed by Dr. Stenhouse for preventing the inhalation of the fetid products given off by putrefying matter, is constructed of layers of powdered charcoal, over which is spread a small quantity of finely divided platinum. The principle is, that the oxygen of the air becomes rapidly condensed upon the surface, and is then said to be capable of totally oxidizing any organic matter that may come in contact with it.

A. J. C.—The phrase "Ex pside Herculem" means that one can judge the size of Hercules' statue by looking at the foot; that is to say, you may get an idea of the magnitude or proportions of a question by a mere glance at its first principles.

Valeriana.—1. The specimen marked 'I. was *Tussilago farfara*, and the other was *Valeriana officinalis*. 2. Bentham's "Handbook of the British Flora" is a larger and more comprehensive work, but Dr. Hooker's "Students' Flora" is admirably arranged, and would be quite sufficient to guide you in naming indigenous plants.

E. W.—Nitrate of silver photographs may be fixed with either a solution of sodium, hyposulphite, or potassium cyanide. The latter works cleaner, but is apt to destroy the finer tones of the picture; owing to this, and its deadly poisonous nature, the "hypo" is generally preferred.

Chemicus (Halifax).—1. We do not know of any work specially devoted to distillation, but you will probably find all the information you need in Ure's "Dictionary of the Arts." 2. Lindley's "Medical and Economic Botany" (Bradbury and Evans).



MONEY VERSUS MICE.

(TO THE EDITOR OF THE "CHEMIST AND DRUGGIST.")

SIR,—The chemists of Whitehaven having come to the conclusion to sell no smaller quantity of "killer" than four-pennyworth, and that the sale should be registered, shows the desirability of some uniform system being arrived at.

The plan, at first, certainly seemed to me good; but with every respect to the opinions of others, I confess, on looking at it again, serious disadvantages and dangers struck me as likely to arise from its adoption.

By placing a prohibitory price on the article, and giving the purchaser a fair quantity for his money, should we not be instrumental in furnishing a means of mischief beyond what is absolutely necessary?

How often do we hear the remark, "I want the smallest quantity you can make, as I can't bear the idea of having poison in the house." Now it is the poor man's cupboard that is most liable to invasion, and to take the value of a half-quarter loaf from his exchequer, will naturally drive him to adopt some protection from his biped enemies, as well as those whose lives he has made up his mind to shorten.

The customer I have in my mind's eye lives in a "row," perhaps, of a dozen cottages, all built at one time, and under the floors of which an extensive "run" or "free warren," for "rats, mice, and such small deer," has existed for years.

A joint-stock company of the occupants of the "row" is formed as soon as the fact gets known that the "chymister" will not sell less than four-pennyworth of poison; and as labouring people cannot afford to throw anything away, a "division" of the killer takes place among the shareholders, and the poison is found in half a dozen houses instead of one; perhaps, tumbling about in a drawer without any protective label whatever!

I am myself the proprietor of a "killer," and should be glad if a plan could be hit upon, making buyer and seller secure, since we all know the truth of Shakespeare's words, "The means to do ill deeds oft makes ill deeds done." While, however, the country people are utterly unable to keep their cats (traps which are always set) out of the range of the gamekeepers' artillery, there seems no alternative but to allow the use of poison, sold with caution, and with labels easily read by all who can read.

I am almost inclined to think that a complete "reversal" of the conclusion arrived at by our Whitehaven brethren would render the general public more secure; a packet of

poison of the *smallest* commercial value would doubtless deprive of life two or three miserable mice, already perhaps far gone in consumption, but might fail to prove fatal to a vigorous and muscular man or woman.

I imagine we should all of us look with suspicion and mistrust on a customer, were we asked to supply half a dozen single pennyworth's of "white cippity powder;" and a question would naturally arise between buyer and seller. Surely then, if half a dozen penny packets of killer were applied for, it would be easy to decline "taking the contract," although we should not object to furnish as large a quantity as might legitimately be needed.

It may be urged that a person with evil intentions could go to half a dozen different shops, purchasing a small packet of killer at each; but I think a man with murder in his mind would be more likely to shrink from coming into contact, face to face, with several individuals, than from making a four-penny purchase at a particular shop where one registration would do instead of six!

Again, if half a dozen penny packets of killer were required to clear a mill or a manufactory, it would be safer to send the article out in six quantities, each one properly labelled, since they might not be all wanted to use at once.

Whether the suggestion may emanate from Whitehaven, or any other haven, so that it is a "haven" of peace, where we can come to a good anchorage on this turbulent question, I shall be glad to unite in it.

Yours,
F.

Maidstone, April 2nd, 1873.

"TRY OUR NOTED MIXTURE!"

(TO THE EDITOR OF THE "CHEMIST AND DRUGGIST.")

SIR,—It is quite refreshing to see the energy and enthusiasm displayed by the gentlemen recently appointed under the Adulteration Act of 1872, and to mark the success of their efforts to expose and bring to justice the scoundrels who live by cheating and poisoning the poor. "Every bird in its lifetime," says the old English proverb, "swallows a peck of dirt," and the man who buys dirt with his eyes open, who eats it, and drinks it, and revels in it, must buy his own experience; but it is when our food is adulterated, not with dirt only, but with deadly poison, that it becomes the duty of the Legislature to protect those who have no means of protecting themselves. The recent disclosures about the iniquities of adulteration are positively sickening, and the public, more especially the poor, are infamously robbed, both of their money and health.

Prussian blue, black-lead, China clay, and terra alba, are not usually considered articles of food; but at Dundee it appears they are believed to possess nutritive properties, and to be capable of assimilation in the human stomach. They are used, it appears, for the adulteration of tea. Starch, turmeric, and carbonate of lime were also found to be sold under the same innocent cognomen. Coffee is mixed with chicory, and cocoa with starch and sugar. Of course bread and flour are adulterated with alum and potatoes, and butter with fat. Strange to relate, claret, port, sherry, porter, bitter ale, rum, and brandy, were found free from adulteration, and it is noteworthy that whisky is not included in the list; probably, because of the impossibility of such an impudent imposture as adulterated whisky escaping detection in the North. We may expect to hear of an exodus of teetotallers from Dundee, and an immigration of wine, beer, and spirit drinkers thither.

But we need not go so far north as Dundee to find adulteration and a large consumption of red-lead, sulphate of copper, chroma yellow, cocculus indicus, "green vitriol," petroleum, and worst of all diseased meat. Much nearer home we find sulphate of copper in our pickles, red lead in our anchovy paste, chrome yellow in our mustard and sweetmeats, cocculus indicus in our beer, green vitriol to give "a head" to our porter and stout; oil of vitriol in our gin and maraschino, petroleum in our champagne, and diseased meat, carrion, red ochre and filthy offal in our sausages. Much nearer home we find coffee adulterated with chicory, and chicory in its turn with

roast beans, parched bullock's liver and parched flour, and again the parched flour in its turn, adulterated with starch and flour of potatoes. We find our chocolate, of whose "homœopathic" and "dietetic" properties we hear so much, adulterated with flour and suet; the flour and suet again with flour of potatoes and tallow. Much nearer home, we have found (and even within the precincts of Sir Sidney Waterlow's jurisdiction) our tea to be adulterated with iron filings and clippings, woody fibre, gritty matter, and a host of other nondescript substances. So much for "The cup which cheers, but not inebriates," while the consumer of a cup of coffee sipping, what he contentedly supposes to be, the "fragrant Mocha berry" alone, is partaking of an infusion of chicory beans, bullock's liver, flour, flour of potatoes, and starch. If, in despair, he flies to chocolate, he simply exchanges one nasty mixture for another, and deluges his system with a greasy decoction of flour, suet, flour of potatoes, and tallow.

A recent critic says of the milk sold in London, that "it would make a cow blush to think that her name was used to cover so abominable a fraud;" and it is a well-known fact that very often under the euphonious title of "Simpson," is sold such an extraordinary mixture, that analysis appears baffled in the attempt to discover the depths of its hidden mysteries. Much further south than Dundee, we find a bad state of morals existing amongst the importers of figs and fruit—we find that 187,488 lbs. of rotten figs and twenty-two barrels of currants had to be destroyed, and that after the removal of the rubbish, "the premises were strewn with thousands of maggots." Rotten fruit forms the basis of "cheap jam," and various sweetstuffs consumed by the children of the poor—lucky children!—and still they are not happy.

And what shall we say of the bread? putting aside the question of short weight. We find the words of Tennyson amply verified:—"While the chalk and alum and plaster are sold to the poor for bread. . . . and the spirit of murder works in the very means of life." The spirit of murder is a strong expression—is it too strong? The sale of an adulterated article involves the presumption of guilt. Let the law treat adulterative theft as robbery and adulterative killing as culpable manslaughter, and we shall soon be rid of this plague.

Yours truly,
NOBODY PARTICULAR.

Trade Memoranda.

Mr. Merritt, chemist, of East-street, Brighton, has disposed of his business, and retired from the trade.

The guardians of the Dudley Union have accepted the tender of Mr. G. T. Owen for the supply of drugs.

The chemists of Stamford, with only one exception, have agreed to close their establishments on the Bank holidays.

Messrs. Orridge and Co., chemists and medical transfer agents, have removed from Cannon-street to 32, Ludgate-hill.

Mr. Austen W. Gardner, chemist, Cathedral Gate, Canterbury, has removed into new premises, next to the Fountain Hotel, in the same city.

Mr. W. Plaister, from Messrs. Savory and Moore's, has opened a chemist's shop, at 13, Gledham-terrace, Richmond-road, South Kensington.

Messrs. F. Green and Co., of Birmingham, have sent us a sample tin of their shilling mustard. The style in which it is put up is very attractive, and the condiment within is of very fine flavour and quality.

Messrs. Batty and Co., of Finsbury-pavement, and 77, Cheapside, have been appointed by the Litre Bottle Wine Company sole agents for the sale of their wines in litres and half-litres for the City.

The old and well-known establishment of Butler, McCulloch, and Co., Covent Garden Market, has lately changed hands, and is now conducted (in partnership) by Messrs. Frederick McCulloch, Archibald Macdonald, and Sydney G. Hart.

Messrs. Burgoyne, Burbidges, and Co. state that there is a great want of chemists' assistants in Queensland. They know of a promising branch business which had to be closed simply for want of a competent assistant to carry it on. They think the colony offers an admirable field for suitable young men.

We notice that another new co-operative society has just been floated in London under the title of the "Imperial Co-operative Company." It intends to conduct stores of this character in London and the suburbs. The directors consist of four clerks, a "financial agent," and a wine merchant.

From Messrs. R. M. Mills and Co. we have received samples of the Bourne Aërated Waters. The water with which they are manufactured is remarkably pure—the purest in England Messrs. Mills inform us. It must be confessed that there is a freshness and pleasantness in the beverages which a connoisseur would readily detect.

Messrs. Lynch and Co., of 171A, Aldersgate-street, have had extensive alterations made in their establishment, and have now provided what is so necessary in such a business—a handsome and perfectly lighted show-room well stocked with samples of sundries. The alterations have been carried out by Treble and Son in their usual excellent style.

Mr. Stamp, of Hampstead, puts up glass-covered boxes, containing half-a-dozen boxes of various dentifrices, well labelled, and very attractive, besides which they are very agreeable dentifrices. We wish also to call attention to some particularly elegant slide boxes containing a bottle of aromatic spirit of vinegar. These may be had either with French or English labels, and would certainly be saleable.

The aërated water manufacturers of Bristol and Bath held a meeting on March 31 at Rubic's Hotel, Bath, when a resolution was passed to the effect that the provisions of the Merchandise Marks Act of 1862 should be put in force, in order to prosecute persons illegally trafficking in the bottles and packages of the manufacturers of the district. A meeting of the same trade was held at Bedford lately, and an association was formed and affiliated to the General Association.

The twenty-sixth annual meeting of the shareholders of Price's Patent Candle Company (Limited) was held at the London Tavern on March 27th. From the report it appeared that the sales of candles, candle material, and night lights during 1872 was larger than had ever occurred before, amounting in all to 7,569 tons, the largest previous tonnage having been 6,544 tons in 1856. The gross profits were larger than before; but as the company had gone to some special expenses with regard to machinery, repairs, etc., the net profit did not quite reach that of 1871. It was also mentioned that in 1872 they had paid £9,000 more for coals, and £8,000 more for labour than in 1871. After making all deductions the net profit of 1872 was £43,691 18s. 3d., against £48,196 14s. 10d. in 1871. A dividend of 6 per cent. on preference shares and 4 per cent. on ordinary shares was declared.

PARISH OF BIRMINGHAM.—There were four tenders sent in for the supply of drugs—viz., Messrs. Morris, Banks, and Son, Philip Harris and Co., Mr. T. W. Holdsworth, and Mr. W. R. Jones. The three former were accepted, the lowest in each case to take the article, and when equal, divided.

THE ILKLEY BREWERY AND AERATED WATER COMPANY.—A company, bearing this name, has been registered during the past month. Its objects, amongst other things, are brewing and the manufacture of aerated or gaseous waters, and the right to use and vend a certain invention of an improved stopper for bottles containing gaseous liquids. A large number of the shares are subscribed. The capital is fixed at £20,000.

NEW CHEMICAL COMPANIES.—Amongst the new limited liability companies just brought out is Spence Bros. Chemical Company, with a capital of £100,000 in shares of £10 each. The objects of the company are to purchase the works and business of Messrs. Spence Bros. and Co., of the Victoria Chemical Works, Ashdon-road, Manchester, and also to purchase the patents of Messrs. P. and D. D. Spence for the manufacture of dry copper as sulphate of ammonia. By agreement, the purchase-money is £33,200 in fully paid up shares.—The Hebburn Alum and Alkali Company, Newcastle-on-Tyne (capital £100,000) has been formed for the purpose of acquiring extensive manufacturing premises situate at Hebburn, and there carrying on the manufacture of alum, sulphate of soda, soda ash, alkali, bleaching powder, and such other chemical products as may be deemed desirable. The manager of the new company is Dr. Lunge, the President of the Newcastle Chemical Society.



DR. REDWOOD has been appointed to the office of Analyst for the parish of Clerkenwell, and the districts of St. Giles and Holborn.

An anonymous correspondent of the *Pharmaceutical Journal* suggests that an acquaintance with the Acts of Parliament relating to Pharmacy might with advantage, be required of candidates for examination. This is a practical and sensible suggestion.

An authoritative statement has been published that a person holding a £2 patent medicine licence may sell patent medicines in any number of places in Great Britain; licences of lower value being in effect anywhere, and in any number of places where the charge for a licence is not higher than that held.

When ink spots are of long standing it is difficult to get them out, since the iron has become thoroughly peroxidized and must be reduced. The following is recommended:—Water, $\frac{1}{2}$ litre; hydrochloric acid, 100 grms.; tin salt, 100 grms. Moisten the spot with this solution, keeping it moist until the colour disappears, and rinse with water.

A presentation of medals was made on the 22nd March, at the South London School of Chemistry and Pharmacy, to the undermentioned students who had passed in honours, at the Pharmaceutical examinations on the 19th, 20th, and 21st March:—S. T. Seners, W. Bramley, J. Askew, J. Blackmore, and E. G. Hodges.

Two large fires have occurred at the Hyde Chemical Works within the last six months. A large quantity of pitch and tar is employed at these works, and of course has proved of immense assistance to the flames. On the first occasion the loss was estimated at £30,000. The damage resulting from the last fire, on March 21st, is perhaps not much less. The works are chiefly owned by gentlemen in Manchester and Liverpool.

A "Grandmotherly Government"—as one of our correspondents described ours last month—is doing what it can by Adulteration Acts and suchlike machinery to crush out of British intellects the ingenious ideas which have perennially sprung up in the breast of the purveyors of our nutrition. The contest between analysts and adulterators has now fairly begun, and will doubtless go on for a while much as the rival experimenters with armour plates and rifled cannon have carried on their endless struggle. Barring the millenium we should back the genius of sophistication to hold out the longest. The analysts may have the advantage for the moment, but at the first lull of public opinion the tricksters will come forth again with old and new devices, and, we may add, the public will be sure to welcome them.

The annual supper of the *employés* of the Glasgow Apothecaries' Company was held on Thursday night in the Caledonian Restaurant, Buchanan-street, when upwards of fifty gentlemen sat down to table. Mr. James McDonald, manager, presided, and Mr. Robert MacAdam officiated as croupier. After supper, the usual loyal and patriotic toasts were proposed by the chairman, and replied to on behalf of the "Army, Navy, and Volunteers" by Lieut. McAdam. The chairman then delivered an appropriate address, after which the toast of the evening "The Glasgow Apothecaries' Company" was given by Mr. Laidlaw, and responded to by Mr. McDonald. The other toasts were, "The Old *Employés*," "The Medical Profession," and "The Ladies," and were spoken to by the croupier and Dr. Moffat, Messrs. Currie, Fenwick, Galbraith, and Rae. The speeches of the evening were interspersed with singing and recitations.

At the meeting of the Pharmaceutical Council on April 2, Mr. Hills announced that Mrs. Waugh, as executrix of the late Mr. Waugh, had presented £100 to the Benevolent Fund. Mr. G. Waugh had bequeathed the sum of £25 for that purpose, but in a private letter to her had suggested that if convenient, and in her opinion desirable, she should make that sum £100. She had satisfied herself as to the desirability, and therefore forwarded a cheque for £100. The President and Council, by formal resolution, expressed their warmest thanks. It was next arranged to hold the *conversazione* at the South Kensington Museum on May 21, permission having been obtained. After passing the list of nominations for election, the Council elected members, etc., and nominated Henry Watts, B.A., F.R.S., an "Honorary and Corresponding Member" of the Society. The financial statement for the year 1872, with balance-sheet and special statements, prepared, as suggested, by a professional accountant, was presented, and, after consideration, was adopted with few alterations. Several grants were made from the Benevolent Fund. The Library, Museum, and Laboratory Committee were authorized to purchase a balance for the use of students if necessary. Some further discussion respecting the bye laws concluded the business.

OBITUARY.

On the 21st of March, 1873, Mr. Francis William Joy, pharmaceutical chemist, of Cardiff, died of bronchitis, at the age of 42 years.

On the 21st of March, 1873, Mr. Josiah Steward, pharmaceutical chemist, of Trimpey, near Bewdley. Aged 69 years.

On the 7th of December, Mr. Thomas Garnett, chemist and druggist, of Kendal. Aged 33 years.

On the 4th of April, 1873, Mr. William Maudsley, chemist and druggist, of 260, Tottenham Court-road. Aged 36 years.

On the 6th of January, 1873, Mr. Thomas Simpson, pharmaceutical chemist, of Stowmarket. Aged 72 years.

On the 28th of January, 1873, at the Cape, whither he had gone in the hope of re-establishing his health, Mr. R. C. Hopgood, pharmaceutical chemist, late of Chipping Norton. Aged 30 years.

On the 7th of March, 1873, Mr. Alexander Hugh Douglas, chemist and druggist, of Cheshunt. Aged 31 years.

Mr. John Garle, Bickley, Kent, many years an Examiner of the Pharmaceutical Society.



AT the Birmingham Police Court, two milkmen were fined 20s. and costs for adulterating their milk and not acquainting their customers of the fact.

At the Chester assizes, Edwin Eastwood, chemist and druggist, of Dukenfield, whom, our readers will remember, was some time since committed for trial on the charge of administering a noxious drug to Ann Jones, thereby causing her death, was sentenced to ten years' penal servitude.

At the West Bromwich Police Court, on 20th ult., Theophilus Challinor, chemist's assistant, was committed to prison for one month for stealing two bottles of scent and two bottles of laudanum, the property of his master, Mr. George Venables Spontane. The prisoner was found in an intoxicated state with the bottles in his possession.

Henry Hollings, a commercial traveller, representing the firm of Messrs. R. Riley and Co., manufacturing chemists, of Liversedge, was sentenced to three months' imprisonment, at Dewsbury, for embezzling moneys belonging to his employers. There was a large number of cases against him, but only a few were taken. He pleaded guilty.

John Robinson, chemist, druggist, and postmaster, of Bruton, near Wincanton, was committed for trial on a charge of embezzling moneys from the Post Office Savings Bank. The unfortunate prisoner, who is an old man, when arrested swallowed poison, and his life was for some time in danger.

At the Clay Cross Petty Sessions, on the 20th ult., a man named Auksworth, and a boy named Fletcher, were brought up in custody before Messrs. Binns and Barnes, the sitting magistrates, charged with stealing quantities of tobacco, the property of Mr. Greaves, chemist and druggist, of Somercotes. Both prisoners pleaded guilty, and were sentenced to one month's imprisonment each.

Mr. W. T. Heaford, chemist, of 238, St. John-street, had a dispute with Mr. James Moir, furniture dealer, of 236, in the same thoroughfare. The latter gentleman relieved his feelings by simply calling Mr. Heaford bad names, but the chemist was more demonstrative, and damaged his neighbour's nose. The case came before Mr. Barker at the Clerkenwell Police Court a few days ago, who fined Mr. Heaford 20s.

At Marlborough-street Police Court, a gentleman named Chittenden was charged with an offence similar to the above, but not having courage to attempt to procure the medicine himself, he gave the money for the purpose to the wretched girl whom he had seduced. She, however, declined to do so, and the defendant escaped with the usual weekly paternal fee of 3s., the cost of summons, solicitor's fee—a guinea, and half a guinea for the midwife.

The lady swindler—known in fashionable watering places as the Hon. Miss Treherne, who was indicted for obtaining goods from various tradesmen by false pretences, and amongst others obtained a set of false teeth, set in gold from Mons. Leyes, of Weymouth, which she afterwards took to Yeovil and pawned for £1—has had her career brought to a close for the present. She has retired to Portland for five years.

At least one London magistrate has gone in for the enforcement of the Adulteration Act. The conviction obtained the other day at Clerkenwell against a tea dealer was followed up by a number of summonses against local milkmen. Their "Simpson" at 2½d. per quart contained 45 per cent. of water. Mr. Barker held that there was ground for a conviction, but these being the first cases which had come before him, he dismissed them with a caution.

The cost of an error depends somewhat on circumstances. Mr. Doherty, of Belfast, sent to Mr. Gibson, a druggist, for some extract of dandelion, and was supplied with extract of belladonna. Through taking the latter, both Mr. Doherty and his sister became seriously ill, but, reckless of the effect

of their act on the legal mind, they both recovered. To mark its contempt for such conduct, the jury awarded Mr. Doherty only a five-pound note instead of the £200 which he seemed to think he had fairly earned.

An upholsterer, named Pulling, applied to the Court of Bankruptcy a few days since for the assistance of the Court under the following circumstances. He had let on hire to Mr. John H. Healte, who had been a chemist at Charing-cross, and was now in liquidation, some furniture worth £100. After Healte had filed his petition, the receiver appointed had seized the furniture and refused to part with it. The property had been advertised for immediate sale, and unless the Court interfered, the furniture would be sold. Having proved that the goods were only on hire, the Registrar granted an immediate injunction on the receiver and auctioneer to restrain the sale.

Emily Thompson bought some red precipitate from a druggist at Hoxton, mixed it with her tea, and drank it off. It did not seem to hurt her much, but she was tried before Mr. Hannay, at the Worship-street Police Court, and he, having examined the Pharmacy Act, discovered that the chemist had complied with its regulations. He cautioned the prisoner and discharged her. The *Era* remarks:—"It has been discovered that chemists in certain portions of London have been selling a deadly poison called 'red precipitate,' apparently without any check, and, in consequence, steps will be taken that the dangerous compound be classed with other poisons and follow the same rules. This cannot be done too soon for the sake of checking murders and suicides, as the police have ascertained there is an enormous sale for 'red precipitate' in the poorer neighbourhoods." If the *Era* had followed the magistrates' example it would not have exhibited its ignorance so recklessly.

At the Shrewsbury assizes a labourer, named Morgan, was sentenced to one month's imprisonment with hard labour; he was charged with unlawfully endeavouring to obtain certain drugs, with intent to cause the miscarriage of some person unknown, from Henry Duckers, chemist, of Market Drayton. The prisoner called on Mr. Duckers, and asked him for a bottle of medicine to give a young woman who was in the family way; but instead of getting the medicine, he got into the hands of the police. In cross-examination it appeared that Mr. Ducker had some local reputation in connection with such cases; he confessed to having himself been charged with conveying a young woman to Birmingham for the purpose of assisting at an operation to procure abortion; to having been tried at the Warwick assizes, and convicted. Since then he has been continually asked for medicine for the same purpose. The judge, whilst expatiating on the enormity and frequency of the offence, took into consideration the fact that the man was a poor uneducated labourer, who really did not know the enormity of the crime; but he wished it to go forth that the Legislature were determined to nip this offence as much as possible in the bud.

In charging the grand jury at Liverpool, on March 27th, Mr. Justice Archibald congratulated them that the calendar was more than usually light. What a heavy calendar at Liverpool would be is too horrible to be even guessed at. This "satisfactory" list (to use his lordship's own word) contained one case of murder, four of manslaughter, one of rape, and a well-assorted collection of the usual crimes. One of the cases of manslaughter was a charge against a mother who had administered too much cough mixture to her child. She had bought the medicine from a chemist, whose name did not transpire, who said he made it of laudanum, vinegar, and other ingredients; but he asserted that in a two-ounce bottle there would be but eight or ten drops of the laudanum. A skilful analyst, however, found that that mixture contained from 120 to 180 drops of laudanum, and that the vinegar was largely adulterated with hydrochloric acid. The judge and the grand jury seemed to disregard altogether the evidence about the laudanum, and fix exclusively on the adulteration, the former remarking that it was "most culpable and improper, and had resulted in fatal consequences." The grand jury threw out the bill against the woman, but "hoped that an investigation would be made into the matter, as in all probability the vinegar had been sold in large quantities elsewhere, and much injury sustained by the public."

NOTE ON RHUBARB.

BY EDWARD R. SQUIB, M.D.

THE following paper was read before the American Pharmaceutical Association at Cleveland last autumn:—The New York market for rhubarb, during the past year, has been very abundantly supplied with all ordinary varieties and qualities, and prices have still tended downward, though the actual decline has been small. The usual results of a full and a falling market have been illustrated throughout the year by a small demand, and slow and difficult sales. Prices have ranged from 40 cents to 1.20 dols. for the various grades of quality, the powder being always below the root in price and far above it in appearance, but with the conspicuous absence of any grade of powder which in price represented the higher grades of quality in the root. Very handsome-looking "Dutch trimmed" and home-manipulated rhubarb has led the market in price throughout the year, and the "handsomer lots" have always commanded "fancy prices" and full profits, while not a single parcel of such rhubarb has been seen by the writer which did not cause a strong suspicion that it was produced from the inferior Austrian, Crimean, or home-grown root. These varieties, and particularly the Austrian, when skilfully manufactured, give not only a fine general appearance or surface of the same colour as the fracture, but also give a fine, sound, mottled compact fracture of good colour. In short, the whole commercial character is overdone, and much too good.

Within the past three years it has become a common trade practice, based upon a convenience to the retailer and consumer, to cut up rhubarb root into small squares or slices by means of fine saws.

This convenience is at best of the patent medicine, or ready-made clothing store kind, while the disadvantages do not seem to be considered. This cutting is but a branch of the drug powdering business in disguise, because its tendency is, under the plea of convenience, to remove the landmarks or indications of true quality, and make the drug more difficult to discriminate.

If the Mosaic law against the removal of the landmarks was enforced against druggists, there would be less competition in the trade—at least so far as the succession from father to son is concerned.

Well-selected and inspected rhubarb is always accessible to the pharmacist who chooses to buy it at the price of this cut root; but by far the best practice is for the pharmacist to make the selection for himself, and then, if desirable, cut it for himself with a small fine panel or back saw.

The finer grades of Chinese rhubarb, which are now abundant in the market at about 1.20 dols. per pound by the chest, should be had from the druggists at about 1.40 dols. in parcels, of say five pounds. From five pounds of such rhubarb more than one-half, or say three pounds of root, can be selected which is thoroughly well adapted to the use of dyspeptics, or those who require the aromatic and tonic qualities of the finest pieces; while the remainder, including the less convenient pieces from the sawing, is equally well adapted to the more numerous ordinary aperient uses of the drug, and may be easily powdered fine enough in a common iron mortar. Thus the pharmacist would realize from five pounds, at 1 dol. 40 cents., say two to three pounds, worth 2 dols. per pound, and the remainder in an unexceptionable powder at whatever cost he may put upon the labour, selecting and powdering.

Without usurping the office of a detective for the rhubarb market, the writer has known of at least four invoices imported within the past year which were entirely and thoroughly worthless. Two of these invoices may have been smuggled in, though the probabilities are against any efforts to smuggle such merchandise. But the other two invoices passed through the custom-house, and were admitted to entry by the proper Government inspectors of drugs. One of these shipments was invoiced at 10d. sterling, and the other at 1s. 3d. sterling, prices which are practically equivalent to 20 and 30 cents gold, per pound, as the foreign cost. Even at such prices these grades are the very dearest of all, because entirely without value. What the ultimate destiny of such parcels may be, it would be curious to know, but such things seem past finding out.

The writer presents herewith, in the exhibition-room of the Association, two cases of rhubarb, which well illustrate this note, and fairly represent the better grades now and during

the past year found in abundance in the hands of several of the prominent importers.

The smaller, or half picul case or chest, is from a shipment of forty such chests, which came by the overland route to Messrs. Reed & Co., and arrived unusually sound. Only three or four chests were found to be attacked by worms, and these only to a limited extent. A part of the invoice is flat and a part round, the ease exhibited being of the round variety, which has always been the most acceptable to the writer for reasons hitherto given. This excellent rhubarb, which really leaves nothing to be desired in regard to quality, is offered by Messrs. Reed & Co. at 1.10 dols. currency, a price which though not exceptionally low for this grade in the present condition of the market, is quite as low as can ever be reasonably expected for a drug of such quality, and quite low enough to take away all legitimate inducement or excuse for buying lower grades for medical use.

The larger, or picul chest, was imported by the writer through the kind offices and skilful selection of his London correspondents, Messrs. Arthur S. Hill and Son. This also is unexceptionable rhubarb, and though imported at a higher cost, is possibly but little if at all better than the Reed and Co. chest. The members present are invited to a very close scrutiny of these two parcels of rhubarb, and to an independent judgment upon their respective merits.

AMMONIA IN SUSPENDED ANIMATION.—We learn from Australian journals that the value of the injection of ammonia, as recommended by Professor Haldord in cases of snake-bite and suspended animation, has again been demonstrated. A lady in Melbourne recently swallowed by accident an ounce of Browne's chlorodyne, which is a mixture of chloroform, morphia, and prussic acid. When seen by her medical attendant, she was, as he imagined, on the point of death—cold, insensible to everything, and giving only occasional gasps as signs of breathing. Recollecting a former case in which a young man who had taken chloroform was revived after death had apparently occurred, the doctor mixed half a drachm of the liq. ammon. fort. with one and a half of water, and within the space of one minute injected the whole into a vein of the arm. In a few minutes the pulse returned, the breathing became natural, and by twenty minutes the whole body had regained its natural warmth; but perfect consciousness did not return for some hours afterward. The patient made a rapid recovery. Two further instances have also been reported in which the timely use of the injection saved the victims of snake-bite from the death which threatened them.—*Scientific American*.

WASHING-BOTTLES A CAUSE OF FIRE.—Dr. H. Carrington Bolton in the *American Chemist*, says:—"On entering my laboratory this morning, I was not a little surprised to see smoke, as from fire, ascending from a corner of my wooden desk. A single glance sufficed to reveal the origin of the incipient conflagration; the rays of the morning sun, streaming aslant through the uncurtained window, struck a large spherical flask filled with distilled water, and, being condensed by this quite powerful lens, were so nicely focused on a projecting corner of the wooden table as to cause intense local heat, attested by the charred and smoking indentation. The flask in question is twenty-two centimetres in diameter, and has a focal length of about ten centimetres. Subsequent experiments showed that it had sufficient power to ignite brown paper, cigars, etc. These data are not given on the supposition of novelty. Lactantius (A.D. 300) mentions that a globe of glass, full of water, could, when exposed to the sun, kindle a fire, "even in the coldest weather," and Pliny recommends such lenses for cauterizing the flesh of sick persons; nevertheless, this morning's observation strikes us very forcibly as a rather novel possible cause of conflagration in cases of so-called spontaneous combustion. In our chemical laboratories, where highly inflammable substances are frequently exposed, washing-bottles, under suitable conditions, might occasion a disastrous fire, the origin of which would remain a mystery. If the flask in question had so great a power at nine o'clock in the morning in the month of December, how much more intense would be the heat focussed from an August midday sun!"—*School of Mines, Columbia College, New York, Dec. 17, 1872.*



REVISED TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the publisher of the CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to "The Publisher of the CHEMIST AND DRUGGIST, Colonial Buildings, Cannon-street, London, E.C., the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

- Lescher's "Elements of Pharmacy," 4s., free. 3/16.
- Six Quart Still, only once used. Borthwick, Kelso.
- About 30 lbs. fair Honeycomb Sponge, 7s. per lb. 25/15.
- "Surgical Diseases of Women," new. Baker Brown. 15s. Offer wanted. Bartlett, Dulwich.
- Surplus Stock, chiefly Drugs and Store Tins. List sent free. 29/15.
- Aitken's "Practice of Medicine," Second Edition, 16s. 19/16.
- Microscope, first-class, little used, in Polished Mahogany Cabinet. Price £4 4s., or offers. 18/16.
- Three Moxon's Magnesia, 2s. 9d., at 1s. 4d. each. Crook, Chemist, Mirfield.
- Twelve 1lb. Bottles (J. F. MacFarlan's) Morphine Acetas Pur., at 13s. per oz. for one or more bottles. 17/16.
- 38½ Extract Rad. Tarax, 1s. 6d., sample sent on application. W., 8, Foregate-street, Worcester.
- Fifty Bottles Beckett's Syrups; Ten Orange and Quinine. Lot 25s. 8/16.
- 50,000 each—Lemonade and Potass. Water Labels. Lot, 3d. per thousand. Frederick Craven, Batley Carr.
- Eight Forceps, Morocco Case, new, 32s.; another Second-hand, 30s. Appleton, Attercliffe, Sheffield.
- Two Quarter-Lenses, Camera, and Slide; Genuine Old Violin. Webb, Chemist, Calne.
- Sheep Dipping Tub complete, nearly new. Price 50s. Thornley, Stow-on-Wold.
- One hundred and ten packets Gillard's Condiment. Price 21s. A. J. Devereux, Chemist, Beaconsfield.
- Four dozen Bland's Corn Solvent. Offers wanted. Proctor and Son, Grey-street, Newcastle.
- A ½ inch Microscopic Object Glass, made by Crouch, London. Apply to Dr. Ross, Newry, Ireland.
- Two Counter Show Cases, 40 inches by 20 inches, 15s. each, or offers. Tully, Chemist, East Grinstead.
- Atfield's "Chemistry," 7s. 6d. J. Tully, jun., East Grinstead.
- Marble Letters for Shop Front, forming name of Pearce; also brass plate for door. J. Varder, Ashburton.
- About 1 Cwt. of Good Cotton Wool, 1s. 3d. per lb. Send Two Stamps for sample. Cheverton, Tunbridge Wells.
- Abernethy's "Lectures on Surgery" and many other works. Send for particulars. Microscope required in exchange. Johnson Cripps, Reepham, Norwich.
- "Pharmaceutical Journal," Eleven Vols., Bound, 1859-70; Perry's Meat Preservative, 6 gallons. Offers requested. 16/16.
- Surplinsage—Best, New, Double Trusses, old principle, Calf, Twill-lined, 20s. doz.; Basil-lined, 25s.; 8 doz. each. 6/16.

The "Handbook of Farriery:" an Epitome of the most approved Standard Works, by a Chemist and Druggist. Price 2s. 6d., free. Joce, Bideford.

Large Iron Mortar, 18½ inches by 15 inches diameter, Lignum Vitæ Pestle. For sale or exchange. Offers wanted. G. Holmes, Medical Hall, Gooch-street, Birmingham.

Patents, £20 worth or more. Nett wholesale price for half such value. Enclose stamp for list. Lowe, Chemist, Everton, Liverpool.

About 40 lbs. of fine genuine Beeswax, 1s. 8½d.; Honey, 7½d.; or exchange for Potass. Bromid., Borax, etc. 4, Victoria-terrace, Bournemouth.

Compound Microscope, 7s.; Roscoe's "Chemistry," 3s. 6d.; Culpeper's "Herbal," 1s.; "Wild Flowers," 1s.; "Virgil," 9d. H. Chambers, Haddenham, Cambridge.

Binocular Microscope, first-class, quite new, with Polariscopes, and other apparatus, in handsome polished mahogany cabinet. Only £10 10s. Apply B., 151, Hoxton-street, N., London.

A Gallon Square Tincture Press, mounted on Stand, equal to new; also a 3-Pint Round Ditto, on Stand, in fair condition. Offers wanted. H. Chapman, Chemist, Clevedon.

About 100 Tincture and Powder Bottles; also about £10 worth of Tinctures and Drugs, at valuation; Show Bottles, 20s. Offers for the whole lot. Address, N. Swann, Windermere.

Granite Mill, with large Fly Wheel, hand or steam power; 2 dozen Leeming's Essence, 26s.; Harness Composition in 6d. and 1s. boxes; a large quantity. Cheap. Fortune, Anstruther.

Nitrous Oxide Apparatus, all complete, by Sprague, with Gasometer, Retorts, etc., only £4 15s.; also a Set of Twelve best Teeth Forceps in pouch, and Scalers, £3. B., 151, Hoxton-street, N.

Soda-water Machine, to make and bottle 700 bottles per day; also an Eight Syrup Soda-water Stand, Dows, Clarke, and Co.'s make. To be sold, either together or separately, very cheap. 3/17.

Nelson's Homœopathic Case and Medicines, £6 10s., price £4; handsome Shop Lamp (Maw's £6), price £3 10s.; also Fixtures, good. "Sigma," 19, Elm Grove-place, Salisbury.

Electro Galvanic Machine, in Mahogany Box, with zinc and platinum plates; several pieces carbon and zinc separate; cost near £4, take £1 10s., or exchange. Caunt, Chemist, Buckley, Flintshire.

Mahogany Cigar Case, six compartments; "Chemist and Druggist," 1868—1872 (February, 1868, missing); Thirty-nine numbers "Pharmaceutical Journal," 1864 and 1865, complete. Offers wanted. Watson, Alresford, Hants.

Musical Box, playing eight airs, handsome rosewood case, patent winder, only £3 15s. Carte de Visite Lens and Camera, by Chevalier; ¼-plate ditto, capital dark box, chemicals, stands, specimens, framed, etc., £6 10s. the lot. A great bargain. B., 151, Hoxton-street, N.

"Pharmaceutical Journal," complete, from 1841-1866; 25 vols., uniformly half-bound, gilt lettered, etc., remainder loose; in good condition the entire. Cash offers, or exchange. J. W., 77, Rusholme-road, Manchester.

Nitrous Oxide Gas Apparatus; never has been used. Consisting of Barth's Economizer, two Clover's Facepieces, Catlin's Bag, 100 gallons Condensed Gas, handsome case. Cost £14. Will take £10. M. D., 15, St. James'-street, Accrington.

Large Mill on strong 2-feet 6-inch Table; Gas Stove and two Evaporating Dishes; 2 feet 6 inches by 3 inches thick Marble Slab, and Mullers; ¼ £3 Portrait Lens, by Jamin, £4; ¼ Camera, 30s.; Stereo Camera, pair Lenses, two Baths, £2; Appengoscope, 12s. 6d. W. Sharpe, Madeley, Salop.

A 70s. Pulvermacher's Chain Battery, in Case, complete, 25s.; a 30s. Volta-Electric Belt and Suspender, 10s., both nearly new; Acton on the "Reproductive Organs," Last Edition, 8s.; Richardson's "Mechanical Dentistry," 10s. 6d.; Owen's "Practice of Perfumery," 1s. 6d. 7/16.

Soda-water Machine, Tyler and Co., No. 4, with Oak Cask, Copper Bell, Lead Generator and Fittings, Copper Solution Pan, Acid Tank and Piping; One-horse Steam Engine, Boiler, Fittings, Feed-pump, and Iron Cistern, in good working condition. Offers wanted. Apply, with trade card, to Orledge, Chemist, Frome.

An offer wanted. A Set of Thirty Drawers, 5 feet 11 inches by 4 feet 8 inches; two Carboy Stands, Mahogany, 14-inch; 9 Bottles of Hoff's Extract of Malt; Mahogany Paper Stand, Maw's, Fig. 50; Two Small Stands to form a circle; Cigar Case—Glass Slides, cost 30s. R. Fouracre, Chemist, Taunton.

Post free. Lescher's "Modified Examination Guide," 1s. 8d.; Barber's "Pocket Pharmacopœia," 2s.; "Pharmaceutical Latin Grammar," 2s. 8d.; Steggall's "First Lines," 2s.; Pereira's "Materia Medica" (Farre), 12s. 6d.; Church's "Chemical Processes of British Pharmacopœia," 1s. 8d.; Owen's "Conspectus," 1s. 2d.; Lescher's "Elements of Pharmacy," 5s. 6d.; Owen's "Receipts," 1s. 2d. 31/15.

One Guinea Cabinet Chemicals, new, Jackson and Townson's; 1 gallon Pneumatic Trough; Six Retorts; small Battery, Bunsen's; etc., and a large variety of Chemicals, in stoppered bottles, admirably suited for experimental chemistry; several books on the subject. Enormous reduction; value £5. Detailed list on application. J. B. Laxton, Gurney-terrace, Gurney-road, Stratford, London, E.

Pereira's "Materia," 18s. 6d.; Graham's "Chemistry," 16s. 6d.; Bentham's "Flora," new, 35s. (published £3 10s.); Hunter "On Teeth," 10s. 6d.; Combe's "Physiology of Man," 4s.; Murphy's "Meteorology," 3s.; Squire's "Astronomy," 2s. 6d.; "Zoologist," 1843—1860 inclusive, £5; Whewell's "Inductive Sciences," 5 vols., 50s.; "Cowper," 8 vols., 15s.; "Burns," 8 vols., 15s.; Proctor's "Other Worlds," 6s. Free. T. Floyd, 2, Paddington-street, Poole's Park, London, N.

1½ cwt. Creta Gallic, in convenient pieces, for retail; 7 lbs. Extract of Aloes, sample sent if required; 13½d. and 2s. 9d., Hibbert's Antiseptic; Good Spongio-Piline; Two 7s. 6d. Calvert's Carbolic Acid; ¼ doz. 3s. Euxesis Shaving Soap; Nine 2s. 9d. Steer's Opodeldoc; Two dozen 2-oz. Crystal Carbolic Acid; 1½ Dredge's Heal All; Homœopathic Medical Cases, in Morocco, retail prices—One 13s. 6d., 22s., 7s. 6d.; two 9s. 6d., 6s. 6d.; 200 Globules, Tinctures, and Pilules, various. An offer wanted. Hardeman, 43, Bury New-road, Manchester.

Grand Botanical Work—Thornton's "Temple of Flora; or, Garden of Nature;" "Philosophy of Botany and Illustrations of the Sexual System of Linneus," containing a great number of fine picturesque engravings of trees, plants, and the choicest flowers, on a large scale, and many of them most beautifully coloured, numerous fine portraits by Bartolozzi, Woolnoth, Earlom, Ward, and other eminent engravers; 5 vols. Royal and Atlas folio, half Russian gilt, marbled edges, with very good copy, £4. This magnificent and finely executed work was published at above £50; also Sutton's "Volumetric Analysis," second edition, clean, 7s., published at 12s. Hasselby, St. Leonards.

Mahogany Counter Case, Plate Glass Top, 66 by 31 in., and 3 in. deep, good condition, 50s. Three Window Tablets, 32 by 6 in., Gold Letters, shaded, "Dispensing" and "Photographic" "Chemist," Ground, Glass Back; the lot 6s. Stereoscopic Porcelain Bath, Porcelain Dish, 9 by 7 in., Printing Frame, hinged bath, spring wedges, inside measure, 4½ by 5½ in., the lot 6s. 6d. Quantity of Stereoscopic Glasses, Cards, Passe-partouts, Cases, etc. List on application. Galvanic Machine by Home, Mahogany Case, good condition, Zinc Plates, worn, 17s. 6d. Pereira's "Materia

Medica," 2 vols., 9s. 6d. An Air-pump, with lot of appliances, in capital condition, barrels 1½ in. diameter, in deal box, 22 in. long, 15 in. deep, and 16 in. wide, to be sold. A bargain. Soda-water Machine, with every appliance, including Syphon Filling Machine. Particulars on receipt of trade card. Moore, Chemist, Cheltenham.

Sem. Anisi 33s., Pulv. 48s.; Sem. Carui 46s., Pulv. 56s.; Sem. Cymini 35s., Pulv. 42s.; Sem. Fœnugrec 18s., Pulv. 28s.; Rad. Gentian 24s., Pulv. 42s.; Rad. Anchusæ 33s.; Marant, St. Vine, opt. 7, 28 lb. tins, 6d. and 6½d. lb.; Gum, Acaciæ, Turc, sorts 85s.; Pulv. Potass. Nit. 40s.; Pulv. Zingib. Jam, opt. 1s. 6d.; Ol. Limon. Puræ, 16s.; Bergamot, 20s.; Tapioca, 4d.; India Rubber Teething Pads, 2s. 9d.; Gum Rings, 1s. dozen; 3j Oval Pomade Bottles, boxwood top, 12s. gross; 3ij and 3iv Round ditto, 20s. and 25s. gross; 3ij, 3iij, and 3iv Screws ditto, 27s., 29s. and 32s. gross; Cockle's, Norton's, Powell's, Winslow's, Steedman's, Browne's Chlorodyne; Troches; Allcock's Plasters, 9s.; Stedman's, 6s. 9d.; Lamplough's, 24s.; Allen's Restorer, 42s.; Mexican, 24s.; Floriline, 20s.; Nelson's and Swinborne's Gelatine, 3s. 6d. and 7s.; Liebig's Extract Company's, 14s. 10d.; Tooth's, 14s. 6d.; Ramornie's, 12s. 10d. Cash with order. Lloyd Rayner, 309, New North-road, Islington, London.

WANTED.

Two handsome Show Jars. 11/16.

Oil Cistern, 100 to 150 gallons. J. Floyd, Bury St. Edmunds.

Attfield's "Chemistry," fourth edition. State price. Moon, Wrangham and Hardy, Malton, York.

Avery's 4 Machine, for weighing casks. W. Sharpe, Madeley, Salop.

"Sheep: their Breeds, Management, and Diseases." By William Youatt. Evans, Moretonhampstead, Devon.

About two dozen glass capped Essential Oil Bottles; one dozen 2 lb. W. M. Lozenge. Gold Labels and Bottles for both; must be perfect. Ettles, Brighton.

One or more Water Beds; size, 36 by 72; if secondhand, in good condition. Also a Condensing Worm for Still; 4ft. high, 2ft. diameter. 10/16.

One or two Oil Cisterns to hold 30 or 50 gallons; clean and in good condition. State lowest price. "Chemicus," Post-office, Preston-street, Manchester.

Specie Jars, with Covers, not painted or "cleaned," heights to shoulder, 20 and 24 inches. T. Guy, 44, Goodram-gate, York.

Babington's "British Botany" and Royle's "Materia Medica," Latest Editions. J. Beauchamp, Mr. Tuck, Tiverton.

Large Marble Mortar, suitable for Horse Powder; also Phoenix, or Wooden Mortar, large, suitable for over door. Size, condition, and price, to Graves, Crewkerne.

Shop fittings of all descriptions in good condition. State full particulars and lowest price. J. E., Post-office Wetherby.

HAIR-DYE.—Harmless hair-dye is made in Greece from green walnut burs (*Juglans regia*), by extracting with water and evaporating until the regianic acid is precipitated as a black powder.

To WASH SILK.—Half a pint of gin, four ounces of soft soap, and two ounces of honey, well shaken. Wet a sponge with the mixture, and rub the silk, which should be spread upon the table. Then wash it through two waters, in which put two or three spoonfuls of ox-gall, which will brighten the colours and prevent them running. Do not wring the silk, but hang it up to dry, and while damp iron it. The lady who furnishes this recipe says she has washed a green silk dress by it, and it looks as good as new.—*Physician and Pharmacist.*

STUPIDITIES.

UNDER this head, Dr. Hall, in his *Journal of Health* for March, 1873, humorously discourses on the tendency of the times, as follows:—"It is really a great wonder that everybody is not dead and buried, and the world itself used up entirely, if the thousandth part of what is told us about microscopical and other 'discoveries,' so called, is true. One man will have it that the glorious Union over which the stripes and stars float so proudly will soon become depopulated, because respectable people don't have children; another has discovered myriads of bugs in the chateaux and waterfalls of the ladies, boring into their skulls, and sucking out all the remaining brains of the dear delightfuls. A German *sarvan* now tells us that every sip of tea we take is full of oily globules, which get into the lungs direct, weaken them, set up a cough, and the person dies of consumption. Another man has found that the purest spring water, clear as crystal to all appearance, if let alone, will deposit a sediment which generates typhoid fever; hence he proposes that everybody shall quit drinking water. Another says that bread has so much lime in it that it is turning us all to bone, and makes us stiff in the joints, that being the reason we have no lithe, sprightly old men nowadays; hence we are full of limps and rheumatics long before our time; therefore we had better quit eating bread altogether, and live on rice and sago and tapioca. The water cure folk assure us that pork and beans and ham and eggs are full of abominable *trichinae*, and that, if one is swallowed, and gets fairly nestled into the system, he, she, or it will breed a million more in a short time, and that roast beef has juvenile tapeworms in it. And here come Tom, Dick, and Harry, all in a row, loaded down with microscopes and spy-glasses, which show as plain as day that the air is swarming with living monsters and putrid poisons, which fly into the mouth, and crawl up the nose, and creep into the ear; hence it is death to breathe such pestilential air, and that the best way is to keep the mouth shut, plug up the nose, and ram cotton into the ears. Ever so many learned professional gentlemen have been torturing poor figures for years to make them tell the stupendous fib that everybody is either crazy or soon will be; that the annual increase is 10 per cent., consequently in eleven years everybody will be crazy, and more too. The fact is that the people who spend their time in hatching out these tomfooleries out to be put to work, and be made to earn an honest living. This world has been pretty well taken care of for some thousands of years, increasing in comfort and wealth and life, the average length of which last has doubled within two centuries, and the population increased perhaps threefold; and the presumption is that the Great Maker of all will so arrange all the antagonistic forces of life for the future as eventually to make 'the wilderness and solitary place to be glad, and the desert to rejoice and blossom as the rose,' and the race be happy still."



THE budget of 1873 could hardly fail to be in some sense satisfactory, as a consequence of the enormous disposable surplus. An excess of revenue over expenditure to the amount of five millions is an occurrence which can fall to the lot of but few Chancellors of the Exchequer, and is of course an indication of the extraordinary commercial prosperity of this country during the past year. Since his first budget, Mr. Lowe has never justified the estimation that he then induced many people to entertain of him, that he had peculiar financial abilities. He has since appeared to be rather below than above mediocrity in his calculations, while nothing is more obvious, especially in this budget, than that he has no fixed ideas respecting taxation whatever. With a surplus of five millions, and a fair prospect of a continuance of prosperity, critics are likely to wink at arrangements which in other times would be severely handled. But surely

the plan of trusting to luck for the second moiety of the American demand is a little unusual with chancellors. The reduction of the sugar duty was not by any means particularly wanted, has been condemned by Mr. Lowe himself, and will work awkwardly all round. If the grocers give a halfpenny per pound to their customers, it will be an unfair sacrifice for them; if they retain the amount, a class will be benefited at the expense of the community. Perhaps as the match-tax was introduced to give an opportunity for letting off a little classical joke, the sugar duty was reduced in order to lead to the jocular remarks respecting its value as a sweetener. This reduction of the duty, however, must tend to its final extinction. The expense of collection will of course be so much greater in proportion, and the gross income from it will now be less than two millions. Mr. Lowe would have better satisfied severe financial critics, and the best judges if he had decided to pay the whole of our liability to America out of this surplus, taken off the penny of income-tax, and left the sugar duties alone for the present. Next year, if our present prosperity continue, would have been time enough to prepare for a free breakfast table.

The season for the shipment of chemicals is now getting towards its height, and there is reason to believe that foreign demand is not quite so active as manufacturers seemed to anticipate. The stocks in the market are somewhat more than sufficient to supply present requirements, and it seems hardly likely that chemicals will long maintain the high prices which in most instances they have reached. One exception must be noted, and that is, in regard to iodine. We wrote last month in reference to this product, and when it stood at 1s., "Last year's experience teaches us that at any moment this product may go up with a bound; and with the knowledge that makers can command the market when they choose, and that they, like other specimens of human nature, can have no objection to an influx of gold, it does seem that this article *must be worth buying*." Towards the end of March the demand had become very active, and none could be obtained for less than 1s. 1d. In another week so strong was the anticipation of a rise and so brisk the demand, that holders were able to obtain as much as 1s. 4d., a figure which has since been fixed by the manufacturers. The latter would seem to be gradually tightening the reins, carefully watching the demand meantime. The slight fall in citric and the dulness in tartaric acid, and the easiness in several other products of large sale, is owing chiefly to the weakness of holders, and the general belief that prices have, for the present, reached a maximum.

There have been two drug sales since our last, and good business has been done. There is nothing much to be noted in the way of variation in quotation. Balsam of Copaiba is very firm, and has slightly advanced. Canada Balsam is very high. Sarsaparilla is a little dearer, and American Oil of Peppermint has got over its recent depression, and gone up 2s. 6d. per lb. Camphor is cheaper. Cardamoms are higher. With regard to Opium, we have heard from Smyrna that the apprehensions of injury to the new crop by frost were unfounded, and that though it is yet too early to forecast the new year's crop, yet there is good ground for anticipating a harvest at least as good as last year. The stock in London is abundant, and lower prices are more probable than higher ones.

The Indigo market remains stagnant, and business is confined to limited parcels. The next periodical auctions are announced for the 21st proximo, for which 6,900 chests are declared.

More business has been doing in olive oil, but prices have further declined. There is probability of a plentiful crop, but of course these hopes may not be realized. Linseed is in demand, and good sales have been made of rape oil. Petroleum has considerably declined in value, but for forward deliveries higher prices are obtainable. Naphtha has declined to 1s. 2½d., and refined coal oil is 1s. 1½d. to 1s. 3½d. The turpentine market is quiet, American fetching 44s., and French 43s.

With reference to petroleum, we see it calculated in the *Titusville Daily Herald*, that the world's stock on Jan. 1, 1873, was 3,849,000 barrels of petroleum, being an increase of 530,990 since Jan. 1, 1872. The total consumption of crude petroleum all the world over during 1872, was 6,664,000, a daily average of 18,500 barrels.

Monthly Price Current.

Prices quoted in the following list are those actually obtained in Mining-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.	1872.		1872.	
	s. d.	s. d.	s. d.	s. d.
ACIDS—				
Acetic per lb.	0 4½	to 0 0	0 4½	to 0 0
Citric "	4 0	.. 0 0	3 10	.. 4 0
Hydrochlor. per cwt	4 0	.. 7 0	4 0	.. 7 0
Nitric per lb.	0 5	.. 0 6½	0 5	.. 0 5½
Oxalic "	0 9½	.. 0 10	1 2	.. 0 0
Sulphuric "	0 0½	.. 0 1	0 0½	.. 0 1
Tartaric crystal .. "	1 7½	.. 1 8	1 8½	.. 0 0
powdersd .. "	1 7½	.. 1 8	1 8½	.. 0 0
ANTIMONY ore..... per ton	320 0	.. 560 0	270 0	.. 290 0
crude .. per cwt	40 0	.. 42 0	36 0	.. 0 0
regulus .. "	0 0	.. 0 0	56 0	.. 56 10
star "	61 0	.. 64 0	56 10	.. 58 0
ARSENIC , lump..... "	20 6	.. 0 0	18 6	.. 18 6
powder..... "	10 10	.. 11 10	7 0	.. 7 3
BRIMSTONE , rough .. per ton	125 0	.. 150 0	125 0	.. 150 0
roll per cwt	10 0	.. 0 0	10 0	.. 10 10
flour..... "	11 6	.. 12 6	11 6	.. 12 6
IODINE , dry per oz.	1 4	.. 0 0	2 3	.. 2 4
VERY BLACK , dry .. per cwt.	8 6	.. 0 0	8 6	.. 0 0
MAGNESIA , calcined .. per lb.	1 6	.. 0 0	1 2	.. 1 3
MERCURY per bottle	275 0	.. 280 0	210 0	.. 220 0
MINIUM , rsd per cwt.	21 3	.. 21 6	21 3	.. 21 6
orange "	32 6	.. 0 0	31 6	.. 32 0
PRECIPITATE , red per lb.	4 3	.. 0 0	3 4½	.. 0 0
white .. "	4 2	.. 0 0	3 3½	.. 0 0
PRUSSIAN BLUE .. "	0 0	.. 0 0	0 0	.. 0 0
SALTS—				
Alum per ton	165 0	.. 170 0	160 0	.. 165 0
powder "	155 0	.. 190 0	150 0	.. 0 0
Ammonia:				
Carbonate per lb.	0 7½	.. 0 7½	0 7	.. 0 7½
Hydrochlorate, crude,				
whits..... per ton	640 0	.. 0 0	560 0	.. 620 0
British (see Sal Ammoniac)				
Sulphate per ton	395 0	.. 400 0	450 0	.. 460 0
Argol, Cape per cwt	80 0	.. 90 0	80 0	.. 92 0
France "	65 0	.. 76 0	72 0	.. 80 0
Oporto, red .. "	32 0	.. 32 6	24 0	.. 28 6
Sicily .. "	60 0	.. 70 0	50 0	.. 65 0
Ashes (see Potash and Soda)				
Bleaching powd. .. per cwt.	13 6	.. 14 0	16 6	.. 0 0
Borax, crude "	50 0	.. 70 0	60 0	.. 65 0
British refnd. .. "	102 6	.. 105 0	109 0	.. 0 0
Calomel per lb.	3 10	.. 0 0	3 2½	.. 0 0
Copper:				
Sulphate per cwt.	31 0	.. 31 6	29 6	.. 33 0
Copperas, green .. per ton	60 0	.. 62 6	60 0	.. 65 0
Corrosive Sublimate .. p. lb.	3 3	.. 0 0	2 7½	.. 0 0
Cr. Tartar , French, p. cwt.	107 6	.. 0 0	115 0	.. 0 0
Venetian grey .. "	0 0	.. 0 0	100 0	.. 0 0
brown .. "	97 6	.. 102 6	0 0	.. 0 0
Epsom Salts per cwt.	5 9	.. 6 3	5 6	.. 6 0
Glauber Salts "	7 6	.. 0 0	4 6	.. 6 0
Lime:				
Acetate, white, per cwt.	14 0	.. 22 6	13 6	.. 23 0
Magnesia: Carbonate .. "	42 6	.. 45 0	42 6	.. 0 0
Potash:				
Bichromate per lb.	0 8½	.. 0 0	0 8	.. 0 0
Carbonate:				
Potashes, Canada, 1st				
sort per cwt.	37 6	.. 0 0	45 6	.. 46 0
Pearlashes, Canada, 1st				
sort per cwt.	49 0	.. 0 0	49 0	.. 49 6
Chlorate per lb.	1 8½	.. 1 9	1 8	.. 0 0
Prussiate "	1 5½	.. 0 0	1 8½	.. 1 9
red .. "	3 1	.. 0 0	3 2	.. 3 3
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride per cwt.	9 0	.. 9 6	10 10	.. 11 0
Iodide..... per lb.	0 0	.. 0 0	35 0	.. 0 0
Quinine:				
Sulphate, British, in				
bottles per oz.	7 8	.. 0 0	7 9	.. 0 0
Sulphate, French .. "	7 8	.. 0 0	7 6	.. 0 0
Sal Acetos per lb.	1 1½	.. 0 0	1 4½	.. 0 0
Sal Ammoniac, Brit. cwt.	48 0	.. 49 0	47 0	.. 48 0
Saltpetre:				
Bengal, 6 per cent or				
under per cwt.	29 3	.. 30 0	30 3	.. 20 9
Bengal, over 6 per cent.				
per cwt.	27 0	.. 29 0	29 6	.. 30 0
Madras..... "	0 0	.. 0 0	0 0	.. 0 0
Bomb. & Kurracheep. ct.				
European..... "	0 0	.. 0 0	0 0	.. 0 0
British, refined .. "	32 6	.. 33 6	34 0	.. 34 6
Soda: Bicarbonate , p. cwt.	19 9	.. 20 0	15 6	.. 16 0
Carbonate:				
Soda Ash..... per deg.	0 3½	.. 0 3½	0 3	.. 0 3½
Soda Crystals per ton	150 0	.. 0 0	130 0	.. 0 0
Hyposulphite .. per cwt.	16 0	.. 16 6	16 0	.. 16 6
Nitrate per cwt.	16 3	.. 16 6	16 0	.. 0 0

	1873.		1872.	
	s. d.	s. d.	s. d.	s. d.
SUGAR OF LEAD , Whits, cwt.	45 0	to 0 0	43 0	to 44 0
Brown .. "	30 0	.. 0 0	31 0	.. 0 0
SULPHUR (see Brimstone)				
VERDIORIS per lb.	1 1½	.. 1 2	1 1	.. 1 3
VERMILION, English .. "	3 8	.. 3 10	3 4	.. 3 6
China..... "	3 9	.. 4 0	3 6	.. 0 0
DRUGS.				
ALOE, Hepatic..... per cwt.	80 0	.. 220 0	70 0	.. 220 0
Socotrine .. "	160 0	.. 320 0	120 0	.. 300 0
Capo, good .. "	30 0	.. 32 0	35 0	.. 38 0
Inferior .. "	20 0	.. 29 0	25 0	.. 34 0
Barbadoes .. "	70 0	.. 190 0	75 0	.. 210 0
AMBERGRIS, grey..... oz.	26 0	.. 30 0	26 0	.. 29 0
BALSAM —				
Canada per lb.	3 0	.. 0 0	1 5	.. 1 6
Capivi .. "	2 8	.. 2 10	2 0	.. 2 1
Peru .. "	9 3	.. 0 0	9 3	.. 9 4
Tolu .. "	1 11	.. 2 0	2 0	.. 2 1
BARKS—				
Canela alba per cwt.	15 0	.. 25 0	15 0	.. 25 0
Cascarilla..... "	20 0	.. 35 0	22 0	.. 37 0
Peru, crown & grey per lb.	1 0	.. 2 8	1 6	.. 3 1
Calisaya, flat .. "	2 10	.. 4 3	3 2	.. 3 4
quill .. "	2 10	.. 4 10	3 2	.. 3 4
Carthagena .. "	0 10	.. 1 9	0 10	.. 1 9
Pitayo "	0 4	.. 1 9	0 10	.. 1 9
Red .. "	1 10	.. 6 0	1 10	.. 6 0
Bucha Leaves .. "	0 2	.. 1 0	0 4	.. 1 0
CAMPOR , China.. per cwt.	82 6	.. 83 0	82 6	.. 0 0
Japan .. "	85 0	.. 0 0	85 0	.. 0 0
Refin Eng. per lb.	1 2½	.. 0 0	1 4	.. 0 0
CANTHARIDES .. "	5 9	.. 6 6	7 6	.. 7 9
CHAMOMILE FLOWERS p. cwt	40 0	.. 80 0	45 0	.. 70 0
CHASTOREUM per lb.	6 0	.. 20 0	3 0	.. 30 0
DRAKON'S BLOOD , p. cwt.	102 6	.. 240 0	110 0	.. 200 0
FRUITS AND SEEDS (see also Seeds and Spices)				
Anise, China star per cwt.	117 6	.. 125 0	130 0	.. 0 0
Spanish, &c. .. "	17 0	.. 36 0	35 0	.. 50 0
Beans, Tonquin .. per lb.	2 0	.. 3 0	1 0	.. 1 8
Cardamoms, Malabar				
good .. "	5 0	.. 6 0	8 3	.. 8 9
inferior .. "	3 6	.. 4 9	7 0	.. 8 0
Madras .. "	2 0	.. 4 6	2 6	.. 7 9
Ceylon .. "	4 9	.. 5 0	3 0	.. 0 0
Cassia Fistula.. per cwt.	12 0	.. 22 0	12 0	.. 30 0
Castor Seeds .. "	5 0	.. 10 0	10 0	.. 12 0
Cocculus Indicus .. "	12 0	.. 14 0	18 0	.. 19 0
Colocynth, apple.. per lb.	0 3	.. 0 6	0 3	.. 0 6
Croton Seeds .. per cwt.	55 0	.. 0 0	54 0	.. 60 0
Cubebs .. "	23 0	.. 0 0	25 0	.. 27 0
Cumin .. "	20 0	.. 36 0	55 0	.. 67 0
Dividivi .. "	11 0	.. 16 0	12 0	.. 15 0
Fenugreek..... "	0 9	.. 0 10	0 11	.. 1 1
Guinea Grains .. "	24 0	.. 25 0	55 0	.. 57 0
Juniper Berries .. "	16 6	.. 17 6	11 6	.. 12 6
Myrobalans "	9 0	.. 14 0	12 0	.. 17 6
Nux Vomica..... "	10 0	.. 15 0	10 6	.. 13 6
Tamarinds, East India .. "	5 0	.. 20 0	2 0	.. 14 0
West India, new .. "	20 0	.. 31 0	12 3	.. 30 0
Vanilla, large per lb.	60 0	.. 71 0	41 0	.. 55 0
inferior .. "	30 0	.. 58 0	23 0	.. 39 0
Wormseed .. per cwt.	0 6	.. 0 0	0 0	.. 0 0
GINGER , Preserved, in bond				
(duty 1d. per lb.) per lb.	0 6	.. 0 9	0 6½	.. 0 11
GUMS (see separate list)				
HONEY , Chili per cwt.	30 0	.. 36 0	50 0	.. 57 0
Cuba "	0 0	.. 0 0	35 0	.. 50 0
Jamaica .. "	30 0	.. 45 0	40 0	.. 56 0
Australian .. "	20 0	.. 40 6	0 0	.. 0 0
IPECACUANIA per lb.	3 5	.. 3 7	4 10	.. 5 0
ISINGLASS , Brazil .. "	2 6	.. 4 6	2 6	.. 4 7
Tonguo sort .. "	3 4	.. 5 2	3 3	.. 5 3
East India .. "	1 0	.. 4 5	1 5	.. 3 10
West India .. "	4 0	.. 4 5	3 10	.. 4 0
Russ. long staples				
" leaf .. "	8 0	.. 12 6	6 0	.. 9 6
" Simovia .. "	3 6	.. 7 6	3 6	.. 6 6
JALAP , good .. "	2 6	.. 4 6	2 0	.. 3 6
infer. & stems .. "	1 4	.. 2 0	1 6	.. 2 8
LEMON JUICE ... per degree	0 2½	.. 0 0	0 1	.. 0 1½
LIQUORICE , Spanish per cwt.	0 0	.. 0 0	35 0	.. 37 0
Italian .. "	0 0	.. 0 0	40 0	.. 60 0
Liquorice Root .. "	6 0	.. 20 0	0 0	.. 0 0
MANNA , flaky per lb.	3 0	.. 3 3	3 3	.. 3 6
small..... "	1 2	.. 1 8	2 0	.. 0 0
MUSK , Pod per oz.	19 0	.. 40 6	20 0	.. 43 0
Grain .. "	65 0	.. 58 0	0 0	.. 0 0
OILS (see also separate List)				
Almond, expressed per lb.	1 0	.. 0 0	1 3	.. 0 0
Castor, 1st pale "	0 5½	.. 0 0	0 5½	.. 0 5½
second .. "	0 5½	.. 0 0	0 5	.. 0 4½
infer. & dark .. "	0 4½	.. 0 0	0 4½	.. 0 4½
Bombay (in casks) .. "	0 4½	.. 0 0	0 4½	.. 0 4½
Cod Liver psr gall.	3 6	.. 5 6	5 0	.. 6 0
Croton..... per oz.	0 3	.. 0 4	0 3½	.. 0 4½
Essential Oils:				
Almond per lb.	30 0	.. 0 0	35 0	.. 0
Aniso-seed .. "	9 0	.. 0 0	11 0	.. 11 3
Bay .. "	0 0	.. 0 0	65 0	.. 70 0
Bergamot .. per lb.	9 0	.. 16 0	8 0	.. 16 0
Cajuput, (in bond) per oz.	0 0	.. 0 0	0 14	.. 0 0
Caraway per lb.	5 6	.. 6 3	5 6	.. 6 3
Cassia .. "	6 10	.. 0 0	5 6	.. 5 9
Cinnamon per oz.	0 9	.. 2 0	0 10	.. 3 0
Cinnamon-leaf .. "	0 3	.. 0 3½	0 2	.. 0 3½

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Essential Oils, continued:—				e. d.	e. d.	e. d.	s. d.	Oils, continued:—				£ s.	£ s.	£ s.	£ s.
Citronello	per oz.	0 2	to 0 0	0 2	to 0 0	0 2	to 0 0	COD	por tun	38 10	to 0 0	32 0	to 33 10	32 0	to 33 10
Clove	per lb.	4 0	.. 0 0	3 6	.. 0 0	3 6	.. 0 0	WHALE, South Sea, pale ..	..	39 0	.. 0 0	36 0	.. 0 0	36 0	.. 0 0
Juniper .....	..	1 9	.. 2 0	1 3	.. 2 4	1 3	.. 2 4	.. yellow ..	..	37 0	.. 38 0	35 0	.. 36 0	35 0	.. 36 0
Lavender .....	..	2 0	.. 5 0	3 0	.. 6 0	3 0	.. 6 0	.. brown ..	..	84 0	.. 35 0	31 0	.. 32 0	31 0	.. 32 0
Lemon .....	..	13 0	.. 15 0	5 0	.. 15 0	5 0	.. 15 0	East India, Fish ..	..	28 0	.. 0 0	28 0	.. 0 0	28 0	.. 0 0
Lomongrass	por oz.	0 3	.. 0 0	0 4	.. 0 0	0 4	.. 0 0	OLIVE, Gallipoli	per ton	43 0	.. 0 0	50 0	.. 0 0	50 0	.. 0 0
Neroli .....	..	0 5	.. 0 0	0 5	.. 0 0	0 5	.. 0 0	Trieste .....	..	41 0	.. 0 0	49 0	.. 0 0	49 0	.. 0 0
Nutmeg .....	..	0 7	.. 0 3	0 4	.. 0 8	0 4	.. 0 8	Levant .....	..	39 0	.. 0 0	47 0	.. 0 0	47 0	.. 0 0
Orange	por lb.	7 0	.. 8 0	7 0	.. 8 0	7 0	.. 8 0	Mogador .....	..	38 0	.. 38 10	46 0	.. 0 0	46 0	.. 0 0
Otto of Roses	per oz.	18 0	.. 25 0	12 0	.. 21 0	12 0	.. 21 0	Spanish .....	..	40 0	.. 0 0	49 0	.. 0 0	49 0	.. 0 0
Patchouli .....	..	4 0	.. 0 0	4 0	.. 0 0	4 0	.. 0 0	Sicily .....	..	40 0	.. 0 0	48 0	.. 49 0	48 0	.. 49 0
Peppermint:								COCOANUT, Cochiti ..	..	30 0	.. 40 0	43 0	.. 0 0	43 0	.. 0 0
American	per lb.	14 6	.. 15 3	13 6	.. 14 6	13 6	.. 14 6	Ceylon ..	..	35 0	.. 35 10	36 0	.. 37 0	36 0	.. 37 0
English .....	..	26 0	.. 28 0	30 0	.. 33 0	30 0	.. 33 0	Sydney ..	..	28 0	.. 33 0	32 0	.. 38 0	32 0	.. 38 0
Rosemary .....	..	1 11	.. 0 0	1 9	.. 2 0	1 9	.. 2 0	GROUND NUT AND GINOLELLY:							
Safras .....	..	3 3	.. 3 8	3 0	.. 3 6	3 0	.. 3 6	Bombay .....	..	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0
Spearmint .....	..	6 0	.. 20 0	4 0	.. 10 0	4 0	.. 10 0	Madras .....	..	25 10	.. 0 0	39 0	.. 0 0	39 0	.. 0 0
Thyme .....	..	1 10	.. 1 11	1 10	.. 2 0	1 10	.. 2 0	PALM, fine .....	..	0 0	.. 39 0	38 0	.. 0 0	38 0	.. 0 0
Mace, expressed ..	por oz.	0 1	.. 0 3	0 1	.. 0 3	0 1	.. 0 3	LINSEED .....	..	33 0	.. 33 5	33 10	.. 0 0	33 10	.. 0 0
OPIMUM, Turkey	per lb.	24 0	.. 27 0	20 0	.. 21 0	20 0	.. 21 0	RAPESEED, English, pale ..	..	37 0	.. 0 0	42 10	.. 43 0	42 10	.. 43 0
inferior .....	..	12 0	.. 20 0	12 0	.. 19 0	12 0	.. 19 0	.. brown ..	..	34 10	.. 34 15	40 10	.. 0 0	40 10	.. 0 0
QUASSIA (bitter wood) per ton		35 0	.. 90 0	80 0	.. 82 6	80 0	.. 82 6	Foreign pale ..	..	38 0	.. 0 0	43 0	.. 43 10	43 0	.. 43 10
RHUBARB, China, good and								.. brown ..	..	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0
fine	per lb.	2 9	.. 6 0	2 3	.. 6 0	2 3	.. 6 0	COTTONSEED .....	..	28 10	.. 0 0	31 10	.. 32 10	31 10	.. 32 10
Good, mid. to ord. ..	..	0 10	.. 2 6	0 5	.. 2 0	0 5	.. 2 0	LARD .....	..	44 10	.. 46 0	50 0	.. 52 0	50 0	.. 52 0
Dutch trimmed ..	..	8 0	.. 10 0	0 0	.. 0 0	0 0	.. 0 0	TALLOW .....	..	31 0	.. 0 0	36 0	.. 0 0	36 0	.. 0 0
Russian .....	..	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0	TURPENTINE, American, cks.	..	48 0	.. 0 0	56 0	.. 57 0	56 0	.. 57 0
ROOTS—Columba	per cwt.	18 0	.. 30 0	24 0	.. 30 0	24 0	.. 30 0	.. French ..	..	46 6	.. 47 0	55 0	.. 0 0	55 0	.. 0 0
China .....	..	20 0	.. 27 0	24 0	.. 26 0	24 0	.. 26 0	PETROLEUM, Crude .....	..	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0
Galaagal .....	..	18 0	.. 22 0	17 0	.. 18 0	17 0	.. 18 0	refined, per gall.	..	1 3	.. 1 4	1 5	.. 1 5	1 5	.. 1 5
Gentian .....	..	18 0	.. 19 0	19 6	.. 0 0	19 6	.. 0 0	Spirit ..	..	1 2	.. 0 0	0 10	.. 0 0	0 10	.. 0 0
Hellebore .....	..	30 0	.. 32 0	30 0	.. 35 0	30 0	.. 35 0	SEEDS.							
Orris .....	..	28 0	.. 36 0	65 0	.. 75 0	65 0	.. 75 0	CANARY	per qr.	46 0	.. 50 0	52 0	.. 58 0	52 0	.. 58 0
Pellitory .....	..	38 0	.. 39 0	60 0	.. 63 0	60 0	.. 63 0	CARAWAY, English per cwt.	..	40 0	.. 44 0	0 0	.. 0 0	0 0	.. 0 0
Pink	per lb.	0 10	.. 1 0	0 9	.. 1 3	0 9	.. 1 3	.. German, &c. ....	..	30 0	.. 36 0	32 6	.. 35 0	32 6	.. 35 0
Rhatany .....	..	0 5	.. 0 11	0 4	.. 0 11	0 4	.. 0 11	CORIANDER .....	..	16 0	.. 20 0	0 0	.. 0 0	0 0	.. 0 0
Seneca .....	..	4 3	.. 5 0	5 3	.. 5 4	5 3	.. 5 4	HEMP	per qr.	40 0	.. 44 0	40 0	.. 44 0	40 0	.. 44 0
Snake .....	..	1 1	.. 1 2	1 2	.. 1 3	1 2	.. 1 3	LINSEED, English per qr.	..	0 0	.. 67 0	0 0	.. 0 0	0 0	.. 0 0
SAFFRON, Spanish ..	..	22 0	.. 26 0	30 0	.. 42 6	30 0	.. 42 6	.. Black Sea & Azof ..	..	0 0	.. 61 0	61 6	.. 62 0	61 6	.. 62 0
SALEP	por cwt.	170 0	.. 180 0	170 0	.. 200 0	170 0	.. 200 0	Calcutta ..	..	65 0	.. 0 0	63 3	.. 0 0	63 3	.. 0 0
SARSAPARILLA, Lima per lb.	..	0 6	.. 0 7	0 8	.. 0 11	0 8	.. 0 11	Bombay ..	..	0 0	.. 0 0	58 0	.. 0 0	58 0	.. 0 0
Para .....	..	1 3	.. 0 0	1 0	.. 1 3	1 0	.. 1 3	St. Petrebrg. ..	..	60 0	.. 61 0	60 0	.. 0 0	60 0	.. 0 0
Honduras .....	..	1 1	.. 1 8	1 2	.. 1 8	1 2	.. 1 8	Mustard, white ..	per bshl.	13 0	.. 16 0	0 0	.. 0 0	0 0	.. 0 0
Jamaica .....	..	2 2	.. 2 7	1 7	.. 2 11	1 7	.. 2 11	.. white ..	..	8 0	.. 9 0	0 0	.. 9 6	0 0	.. 9 6
SASSAFRAS	per cwt.	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0	POPPY, East India per qr.	..	71 0	.. 0 0	65 0	.. 66 0	65 0	.. 66 0
SCAMMONY, Virgin ..	per lb.	20 0	.. 31 0	26 0	.. 32 0	26 0	.. 32 0	SPICES.							
second & ordinary ..	..	14 0	.. 25 0	10 0	.. 25 0	10 0	.. 25 0	CASSIA LIONEA	per cwt.	70 0	.. 85 0	104 0	.. 118 0	104 0	.. 118 0
SENA, Bombay .....	..	0 2	.. 0 5	0 3	.. 0 5	0 3	.. 0 5	Vera .....	..	25 0	.. 60 0	42 0	.. 92 0	42 0	.. 92 0
Tinuivelly .....	..	0 2	.. 0 10	0 2	.. 1 4	0 2	.. 1 4	Buds .....	..	117 0	.. 122 6	130 0	.. 140 0	130 0	.. 140 0
Alexandria .....	..	0 2	.. 1 0	0 3	.. 1 7	0 3	.. 1 7	CINNAMON, Ceylon,							
SPERMACELE, refined ..	..	1 6	.. 0 0	1 6	.. 0 0	1 6	.. 0 0	1st quality	per lb.	2 3	.. 3 8	2 4	.. 3 8	2 4	.. 3 8
American .....	..	1 2	.. 1 3	1 2	.. 1 3	1 2	.. 1 3	2nd do. ....	..	1 9	.. 3 4	1 9	.. 3 5	1 9	.. 3 5
SQUILLS .....	..	0 1	.. 0 2	0 1	.. 0 2	0 1	.. 0 2	3rd do. ....	..	1 5	.. 3 0	1 7	.. 2 11	1 7	.. 2 11
GUMS.								Tellicherry .....	..	2 8	.. 3 1	2 7	.. 3 2	2 7	.. 3 2
AMMONIAC drop	per cwt.	95 0	.. 160 0	90 0	.. 165 0	90 0	.. 165 0	CLOVES, Penang .....	..	1 4	.. 1 5	1 3	.. 1 4	1 3	.. 1 4
lump ..	..	80 0	.. 130 0	55 0	.. 80 0	55 0	.. 80 0	Amboyana .....	..	0 6	.. 0 11	0 5	.. 0 10	0 5	.. 0 10
ANIMI, fine washed ..	..	250 0	.. 320 0	300 0	.. 340 0	300 0	.. 340 0	Zanzibar ..	..	0 8	.. 0 8	0 4	.. 0 0	0 4	.. 0 0
bold scraped ..	..	210 0	.. 240 0	230 0	.. 290 0	230 0	.. 290 0	GINOER, Jam., fine per cwt.	..	100 0	.. 200 0	90 0	.. 180 0	90 0	.. 180 0
sorte .....	..	150 0	.. 230 0	160 0	.. 260 0	160 0	.. 260 0	Ord. to good ..	..	52 0	.. 90 0	37 0	.. 57 0	37 0	.. 57 0
dark .....	..	90 0	.. 120 0	100 0	.. 150 0	100 0	.. 150 0	African .....	..	45 0	.. 46 0	32 0	.. 0 0	32 0	.. 0 0
ARABIC, E. I., fine								Bengal .....	..	44 0	.. 45 0	35 0	.. 0 0	35 0	.. 0 0
pale picked ..	..	75 0	.. 78 0	73 0	.. 76 6	73 0	.. 76 6	Malabar .....	..	43 0	.. 44 0	38 0	.. 0 0	38 0	.. 0 0
erts, gd. to fin ..	..	55 0	.. 69 0	60 0	.. 72 0	60 0	.. 72 0	Cochin .....	..	52 0	.. 125 0	50 0	.. 110 0	50 0	.. 110 0
garblings ..	..	23 0	.. 50 0	23 0	.. 42 0	23 0	.. 42 0	PEPPER, Blk, Malabar, per lb.	..	0 7	.. 0 0	0 7	.. 0 0	0 7	.. 0 0
TURKEY, pick. gd. to fin.	..	160 0	.. 230 0	160 0	.. 200 0	160 0	.. 200 0	Singapore .....	..	0 7	.. 0 0	0 6	.. 0 0	0 6	.. 0 0
second & inf. ....	..	85 0	.. 150 0	85 0	.. 150 0	85 0	.. 150 0	White, Tellicherry ..	..	0 0	.. 0 0	0 0	.. 0 0	0 0	.. 0 0
in sorts ..	..	0 0	.. 0 0	65 0	.. 80 0	65 0	.. 80 0	Cayenne .....	..	1 0	.. 2 0	1 4			

